

UNIVERSITY OF KWAZULU-NATAL

Waste and port reception facilities

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GLOSSARY OF ACRONYMS

IMO	International Maritime Organisation
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978
UNCLOS III	United Nations Convention on the Law of the Sea
London Dumping Convention	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972
OILPOL	International Convention for the Prevention of Pollution of the Sea by Oil 1954
INTERVENTION	International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969
OPRC	International Convention on Oil Pollution Preparedness, Response and Co-operation 1990
IAPH	International Association of Ports and Harbours
UNEP	United Nations Environment Programme
ECOSOC	Economic and Social Council
UNCTAD	United Nations Conference on Trade and Development
UNCED	United Nations Conference on Environment and Development
PRDF	Port Reception Facility Database
GISIS	Global Integrated Shipping Information System
CDEM	Construction, design, equipment and manning
LOT	Load on top
SBT	Segregated ballast tanks
OOW	Crude oil washing
IBC Code	International Bulk Chemical Code
BCH Code	Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk
OCIMF	Oil Companies International Marine Forum
TDG	Transport of Dangerous Goods
GHS	Globally Harmonized System

GESAMP	Group of Experts on the Scientific Aspects of Marine Environmental Protection
HELMEPA	Hellenic Marine Environment Protection Association
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
DWA	Department of Water Affairs
DEA	Department of Environmental Affairs
TNPA	Transnet National Ports Authority
MARWAS	Marine Waste
DETR	Department of Transport, Environment and the Regions
MPAG	Marine Pollution Advisory Group

ABSTRACT

Internationally, shipping, boating and ancillary services are seen as significant contributors to degradation of the marine environment, affecting water quality, habitats and coastal amenity. As a result, it is important to ensure good practice with regard to safety issues when discharging or handling such wastes while vessels are in the port's jurisdiction. The international standards for regulating the prevention of marine pollution through ship generated waste are clearly outlined primarily in the United Nations Convention on the Law of the Sea 1982 ("UNCLOS") and the International Convention for the Prevention of Pollution from Ships 1973 as amended by the Protocol of 1978 ("MARPOL 73/78"). The proposed study will explore compliance to MARPOL 73/78 Convention's requirement for governments to ensure the provision of adequate port reception facilities capable of receiving ship board residues and mixtures, containing oil, noxious liquids or garbage, without causing undue delay. The paper further reviews the implementation of the Conventions in the European Union and South Africa as it aims to provide a profile of the availability of waste reception facilities to assess their effectiveness in addressing the problem of marine pollution through ship generated waste. It is concluded that a variety of South African legislation is also applicable to marine pollution, but inadequately enforced. Further, that there was a considerable range of legislation intended to protect the North Sea and European waters in general from marine pollution but marine pollution from vessels is still considered to be a significant problem. In conclusion, it is recommended that South Africa should urgently develop effective mechanisms to monitor the enforcement of legislation adequately.

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CHAPTER 1: BACKGROUND

As the global population expands and human development increases, the marine environment is coming under increasing strain from the practice of disposing of pollutants in the oceans.¹ The growth in international trade directly increases the risk of marine pollution by increasing the number of shipments across the Earth's oceans. Seaports, which play an important part in the carriage of goods by sea have come under growing pressure to accommodate the increasing number of vessels calling at a particular port. Consequently the protection of the marine environment from further destruction from ship-generated waste² has become a pressing international concern. It is important to ensure the proper regulation of ship-generated waste.³ This study explores compliance with the relevant international standards and in particular the requirement for governments to ensure the provision of adequate port waste reception facilities,⁴ capable of receiving ship-generated waste and mixtures containing oil, noxious liquids and garbage, without causing undue delay.⁵ The study will critically review the implementation of the international standards under the English and South African law and assess their effectiveness in addressing the problem of marine pollution through ship-generated waste. It is concluded that there are existing instruments in South African law regulating the discharge of ship-generated waste. The problem however lies in the enforcement of the existing rules and standards.⁶ In conclusion, it is recommended that South Africa should urgently develop effective mechanisms to properly monitor and facilitate enforcement.

The seas cover $362 \times 10^6 \text{ km}^2$ or 71% of the earth's surface, containing a volume of $1286 \times 10^6 \text{ km}^3$ (av. depth 3,55 km) of sea water, compared with only $35 \times 10^6 \text{ km}^3$ of fresh water. The coastline of South Africa, bounded by the Indian and Atlantic oceans has length of some 3 000km. The coastal waters act as the ultimate sink for a large proportion of the waste effluents generated by the country's population.⁷ If ship-generated waste were not well managed it would not only affect seaports, but marine aquatic life in its entirety and the ecological balance of the globe. Hence, the International Maritime Organization (IMO) has developed a number of marine environment

¹ G Hardin. *Exploring New Ethics for Survival*. (1978) 254

² <http://www.publications.parliament.uk/pa/cm200809/cmgeneral/deleg4/090120/90120s01.htm>

³ <http://www.espo.be/publications/wastemanagement>

⁴ <http://www.jgarraio.pt/catalogo/IMO/environmentdocs.htm>

⁵ The regulation of vessel-source marine pollution: Reconciling the maritime and coastal state interest (1997) *SJICL* Vol 1 355–381

⁶ W. van Reenen. "Rules of Reference in the new Convention on the Law of the Sea, in particular in connection with the pollution of the sea by oil from tankers", *Netherlands Yearbook of International Law*, 12/1981

⁷ KS Russel and Ematek. *Review of marine pollution for the South Africa coast*. Division of the Earth, Marine and Atmospheric Science and Pollution –CSIR

regulations to set up international⁸ standards to control and prevent operational discharges of oil and other hazardous substances into the sea with the objective of⁹ minimising or eliminating the adverse impact of the operations of every type of vessel.¹⁰

In view of the fact that ship-generated wastes are hazardous to the marine environment¹¹ and/or human health, it is important to ensure good practice with regard to environmental/safety issues when discharging or handling such wastes while in port. Safety regulations for the discharge and handling of wastes should be based on national legislation, international conventions and recommendations as well as accepted industry standards and guidelines. Internationally, shipping, boating and ancillary services are seen as significant contributors to the degradation of the marine environment, affecting water quality, habitats and coastal amenities. The oil spills, ballast water discharges, anti-fouling paints, disposal of wastes from vessels, port dredging and port operations result in¹² marine pollution.

Although the main focus of this study is ship-generated waste and port waste reception facilities, it is important to set it within the context of the¹³ very broad field of maritime legislation, both international and regional, which is also relevant to the governance of ship-generated waste. It should be noted that discussion on ship-generated¹⁴ waste and port waste reception facilities¹⁵ is impossible if it ignores the discussion around marine pollution more specifically, as well as the sources of marine pollution.

1.1 Sources of marine pollution

The public perception of marine pollution from ships is usually of large catastrophic disasters involving tanker accidents such as the *Torrey Canyon*, the *Braer* and the *Sea Empress*.¹⁶ Although major oil spills make for dramatic television coverage and have done nothing to promote the public image of the shipping industry, in terms of tonnage it is operational discharges (as opposed to

⁸ "International developments", Commonwealth Law Bulletin, 04/1993

⁹ <http://iea.uoregon.edu/texts/1974-ProtectionMarineEnvironmentBalticSea.EN.htm>

¹⁰ [http://www.mima.gov.my/mima/htmls/depts/profile/apandi/misc/011% waste 2001.pdf](http://www.mima.gov.my/mima/htmls/depts/profile/apandi/misc/011%20waste%202001.pdf)

¹¹ [http://www.legislation.sa.gov.au/LZ/C/A/Protection of Marine Waters \(Prevention of Pollution from Ships\) Act 1987.](http://www.legislation.sa.gov.au/LZ/C/A/Protection%20of%20Marine%20Waters%20(Prevention%20of%20Pollution%20from%20Ships)%20Act%201987.pdf)
56

¹² <http://www.epa.qld.gov.au/publications/p01466aa.pdf>/Communicating with the maritime industry about sea areas sensitive to shipping and boating operations ANZECC strategy to protect the marine environment Australian and New Zealand Environment and Protection Council

¹³ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

¹⁴ <http://www.nepa.gov.jm/WSSD/CWIP/CoastalConf1999.pdf>

¹⁵ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

¹⁶ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

accidental discharges) from shipping that form the largest source of oil pollution in the oceans.¹⁷ Some estimates indicate that normal shipping operations are responsible for over 70% of the oil entering the sea from marine transportation, but as the oil is often spread over a large number of locations, the effects of operational discharges may appear less dramatic than the often-catastrophic localised effects of accidental oil spills. They do, however, give rise to a number of chronic pollution problems, particularly in low energy environments such as ports and harbours. Statistics show that 80% of oil spills occur in harbour waters. Clearly, these are not the only ship-generated wastes.¹⁸ Other ship-generated wastes may be equally hazardous but to date have generally received less public attention because they are subtler and less visible, e.g. chemical discharges. Furthermore, there are arguably less hazardous but highly visible discharges in the form of garbage. Despite considerable efforts by the shipping industry over the past few decades, which have resulted in substantial reductions in marine pollution, there is still much room for improvement, particularly with regard to both the legal and illegal operational discharges of oil and garbage from ships.¹⁹ Iwan Ball argues that there are five main reasons why ships continue to pollute illegally:²⁰

- the inadequacy of port waste reception facilities for many types of waste, i.e. facilities may be absent or unsuitable, difficult to use, hard to find, or inconveniently located;
- many types of vessel often operate to very tight schedules which allow only a very limited amount of time in port to dispose of operational waste;
- the low probability that illegal dumping activities will be detected and sufficient evidence collated to prosecute;
- the high cost incurred by the shipowner for the handling and disposal of waste by some port authorities/waste contractors; and
- mariners have become accustomed over many years to discharging waste into the sea and are unaware of the effect of their actions on the marine environment.

In this study the focus is on the²¹ "*port waste reception facility*" issue, although the researcher agrees with Iwan Ball that the issues outlined above are interlinked, and should therefore feature in any integrated solution for reducing the amount of waste discharged at sea. The study initially considers the problem from an international viewpoint, and goes on to describe the approach taken

¹⁷ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

¹⁸ Ball, I.. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

¹⁹ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

²⁰ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

²¹ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

by the UK²² ports and South Africa in meeting their obligations to ensure that adequate port waste reception facilities are provided in ports for the reception of ship-generated waste.²³ Further, it will make reference to the steps taken to raise awareness of potential users to the facilities available, and to discourage the illegal dumping of waste at sea.²⁴ Reflection on the sources of waste is critical in order to comprehend how the increasing number of vessel calls directly increases the risk of marine pollution. The following sources of marine pollution²⁵ are highlighted:²⁶

Oil pollution. The most common instance of ship-generated waste is oil pollution, whether caused intentionally, by the discharge of normal shipping activities or arising out of accidents including collisions and stranding of titanic supertankers (such as in March 1978, of the Amoca Cadiz which was carrying about 230 000 tons of oil).

Plastic pollution. Plastic is easy to manufacture, relatively cheap, durable and light. It is precisely these qualities that make it such a pollution problem.²⁷ Not only is it often discarded, but it is carried by wind and water from inland and other marine sources. Plastic kills marine animals by entanglement, suffocation and starvation when it is eaten. It also causes damage to boats.²⁸ The Hellenic Marine Environment Protection Association (HELMEPA) indicates that it takes 450 years for a plastic bottle to dissolve at sea.²⁹

Dumping from ships. Many countries dump land-generated waste into the sea. Such materials include dredge spoils from harbour maintenance activities, sewage sludge, obsolete equipment and chemical waste.³⁰

Atmospheric sources of pollution. A great deal of research has been carried out worldwide on pollution of the sea from the atmosphere. Pollutants reach the sea *via* precipitation (rainfall), contaminated dust and direct gas³¹ exchange. Man-made pollutants include fluorocarbons, chlorofluorocarbons ("CFCs") and halogenated hydrocarbons of high molecular weight. It has been

²² Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

²³ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

²⁴ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

²⁵ Submitted to International Space University on 2009-12-02

²⁶ Meredith Thornton and Sue Matthews. People and the Coast: Pollution.

²⁷ <http://sacoast.uwc.ac.za/publications/2F-Pollution.pdf>

²⁸ <http://sacoast.uwc.ac.za/publications/2F-Pollution.pdf>

²⁹ Hellenic Marine Environment Protection Association (HELMEPA), Time taken for objects to dissolve at sea.

³⁰ <http://sacoast.uwc.ac.za/publications/2F-Pollution.pdf>

³¹ Ibid.

estimated that thousands of tons of petroleum-derived hydrocarbons are deposited in South African marine waters annually.³²

1.2 Effects of marine pollution

Although many of the effects of marine pollution are obvious, such as beach litter, oiling of sea birds, strangulation or entanglement of marine life, other effects are not as easily visible. Insecticides such as DDT and Dieldrin do not dissolve in water, but they do accumulate in the fatty tissues of animals and as they are long lasting they are passed up the food chain.³³ Female seals and dolphins pass these accumulated poisons through their milk to their offspring. DDT ingested by fish-eating birds, such as pelicans and fish eagles, can lead to the production of thin eggshells and the subsequent loss of chicks.³⁴

Unfortunately DDT is still the most effective treatment for malaria-carrying mosquitoes and is still used in South Africa. Great care is needed to prevent it from getting into the rivers and the sea. Plankton typically has short lifecycles and permeable bodies which make them particularly vulnerable to environmental damage and toxins. Yet the whole balance of nature ultimately depends on plankton in the surface layer of the oceans.³⁵ Plankton helps to make the air fit to breathe and provides the first link in the marine food chain. If, for example, the ozone layer were to become so depleted that ultraviolet rays could reach the sea with doubled intensity, plankton production might be severely impaired. Marine food webs would be disrupted and carbon dioxide would rapidly accumulate in the atmosphere, accelerating the greenhouse effect and the warming of the earth.³⁶

Having noted that vessels continue to discharge ship-generated waste at sea despite wide-ranging legislation at all levels and the legal requirement for provision of port waste reception facilities, into which a wide range of waste can be discharged, this study will explore compliance with the MARPOL 73/78 Convention's requirement for governments to ensure the provision of adequate port waste reception facilities³⁷ capable of receiving ship board residues and mixtures, containing

³² <http://sacoast.uwc.ac.za/publications/2F-Pollution.pdf>

³³ Ibid.

³⁴ Meredith Thornton and Sue Matthews, *People and the Coast: Pollution*. <http://sacoast.uwc.ac.za/publications/2F-Pollution.pdf>

³⁵ <http://sacoast.uwc.ac.za/publications/2F-Pollution.pdf>

³⁶ Meredith Thornton and Sue Matthews, *People and the Coast: Pollution*. <http://sacoast.uwc.ac.za/publications/2F-Pollution.pdf>

³⁷ <http://www.jgarraio.pt/catalogo/IMO/environmentdocs.htm>

oil, noxious liquids or garbage,³⁸ without causing undue delay. The study will provide a clear picture of how port waste reception facilities function to enhance the effectiveness of the Directive 2000/59/EC on port waste reception facilities for ship-generated waste and cargo residues and to ensure a harmonised implementation amongst member states.³⁹ This study therefore aims to provide a profile of the availability of port waste reception facilities in the UK⁴⁰ and South Africa. It will outline the roles and responsibilities of Flag States,⁴¹ Port States and the IMO in tackling issues associated with ship-generated waste and the port waste reception facilities.

With Chapter 1 focusing on background information on the subject matter, Chapters 2 and 3 will provide the legal and regulatory framework with particular reference to legal obligations, rights and duties of member states and port states. These chapters will also provide a discussion around the achievement of adequate port waste reception facilities, enforcement, compliance and the roles of the IMO, the flag state and the port state.⁴² In order to better understand the legislative and regulatory framework, Chapter 2 examines the history of the development of various international and other agreements. An overview of the broad range of regional marine pollution treaties and agreements will also be provided. A framework of multiple treaties, regulations, directives and conventions, is offered in Chapter 2, which also looks at some of the broad range of bodies involved in the legislative process.

Chapter 4 will outline in detail different types of ship-generated waste and applicable regulations and suitable reception facilities. Chapter 5 will focus on the implementation processes of MARPOL 73/78 in the UK ports and South Africa and reflect on the challenges and successes. Chapter 6 will provide conclusions and recommendations for South Africa.

“Finding a solution to the myriad problems of ship-generated waste management is going to be a dirty job, but somebody has to do it. For too long this issue has been sitting on the work programmes of industry and regulatory bodies, but little progress is made. Ship-owners can rightfully point to the woeful lack of port waste reception facilities and the massive disparity in services available from port to port. But they are not blameless in this equation. Many masters fail to consider that the reporting of inadequate port waste reception facilities is an important priority,

³⁸ [http://iwlearn.org/docs/gclme/gclme brief annex.pdf](http://iwlearn.org/docs/gclme/gclme%20brief%20annex.pdf)

³⁹ [http://www.seas-at-risk.org/images/Carl Bro study.pdf](http://www.seas-at-risk.org/images/Carl%20Bro%20study.pdf)

⁴⁰ <http://www.mima.gov.my/mima/htmls/papers/pdf/apandi/waste2004.pdf>

⁴¹ <http://internationaloceaninstitute.dal.ca/IOI2004/lecturers/N0426159.pdf>

⁴² <http://internationaloceaninstitute.dal.ca/IOI2004/lecturers/N0426159.pdf>

thereby compounding the ongoing issue. Meanwhile, owners have failed to pick up on the need for better education of crew and adherence to strict onboard rules and regulations.”⁴³

The presentation by Nikos Mikelis of IMO in Brussels on 14 October 2010 indicates the following:

- The subject of port reception facilities appeared very early on the agenda of the IMO’s Marine Environment Protection Committee (“MEPC”).⁴⁴ The MEPC 2 discussed submissions on port reception facilities by the USA, Japan, ICS and OCIMF in November 1974, and encouraged further submissions to serve “as a basis for preparing guidelines to assist developing countries in taking the necessary steps to implement the 1973 Convention”.
- The MEPC 3 “noted that certain States had reported difficulties in accepting and implementing the 1973 Convention particularly with regard to the provision of the necessary reception facilities and monitoring equipment for the discharge of oil” in July 1975.
- The MEPC 3 also established its first working group on reception facilities to study “the requirements and limitations imposed by the 1973 Convention with respect to the provision of reception facilities for wastes containing oil, noxious chemical substances, sewage and garbage from ships.”
- The MEPC 3 “took note of the report of the Working Group and agreed that it should be used as a basis for further work during the intercessional period”.
- In the 35 years since the MEPC 3, the subject of port reception facilities has been in the agenda of virtually all its meetings. In that time, various working and correspondence groups have been established and much progress has taken place in IMO, and more importantly in many ports around the world.
- Nevertheless, it is often claimed that inadequacies in port reception facilities continue to exist and no doubt the problem will continue in the future. The MEPC therefore maintains its watch and involvement in this issue.⁴⁵

⁴³ LexisNexis News Homepage. Keep it clean. (2008) Guardian Newspapers 12 September 2008.

⁴⁴ <http://www.euroshore.com/regulatory>

⁴⁵ Nikos Mikelis. IMO’s Action Plan on tackling the inadequacy of port reception facilities. Ships’ Waste: Time for action! Brussels (2010) 3-5

CHAPTER 2: REGULATORY FRAMEWORK CONCERNING PORT-WASTE RECEPTION FACILITIES

“Shipping is perhaps the most international of the world's industries, serving more than 90 per cent of global trade by carrying huge quantities of cargo cost effectively, cleanly and safely. The ownership and management chain surrounding any ship can embrace many countries and ships spend their economic life moving between different jurisdictions, often far from the country of registry. There is, therefore, a need for international standards to regulate shipping, which can be adopted and accepted by all. The first maritime treaties date back to the 19th century. Later, the Titanic disaster of 1912 spawned the first international safety of life at sea, SOLAS Convention, still the most important treaty addressing maritime safety.”⁴⁶

The Convention establishing the International Maritime Organization (IMO) was adopted in Geneva in 1948 and the IMO first met in 1959. The organization's main task has been to develop and maintain a comprehensive regulatory framework for shipping and its remit today includes safety, environmental concerns, legal matters, technical co-operation, maritime security and the efficiency of shipping.⁴⁷ A specialized agency of the United Nations with 169 Member States and three Associate Members, the IMO is based in the United Kingdom with around 300 international staff. The IMO's specialized committees and sub-committees are the focus for the technical work to update existing legislation or develop and adopt new regulations, with meetings attended by maritime experts from Member Governments, together with those from interested intergovernmental and non-governmental⁴⁸ organizations. The result is a comprehensive body of international conventions, supported by hundreds of recommendations governing every facet of shipping.⁴⁹ There are, firstly, measures aimed at the prevention of accidents, including standards for ship design, construction, equipment, operation and manning. The key treaties include SOLAS, the MARPOL73/78 Convention for the prevention of pollution by ships and the Standards of Training, Certification and Watch keeping (STCW) 1995 Convention for seafarers.⁵⁰

For a discussion on port waste, pollution and water quality management, the following international instruments are pertinent:

⁴⁶ Introduction to International Maritime Organisation. Available at <http://www.imo.org> (Accessed on 22,23 and 24 January 2011)

⁴⁷ <http://www.imo.org/About/Pages/Default.aspx>

⁴⁸ <http://www.imo.org/About/Pages/Default.aspx>

⁴⁹ <http://www.imo.org/About/Pages/Default.aspx>

⁵⁰ Introduction to International Maritime Organisation. Available at <http://www.imo.org> (Accessed on 22, 23 and 24 January 2011).

- The International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78);
- The United Nations Convention on the Law of the Sea (UNCLOS III);
- The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Dumping Convention), 1972;⁵¹
- The International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL), 1954 (pre-IMO);
- The International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (INTERVENTION), 1969, and
- The International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990.⁵²

2.1 The International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78)

One of the most important⁵³ IMO Conventions is MARPOL 73/78, which covers both accidental and operational oil pollution and pollution by chemicals, goods in packaged form, sewage and garbage⁵⁴ on the open ocean and in ports.⁵⁵ It is the main international convention for the reception of ship-generated waste in ports.⁵⁶ It also regulates the type and quantities of waste that ships may discharge into the seas and the⁵⁷ mechanism for discharge. MARPOL 73/78 also stipulates the port waste reception facilities that should be available in ports to off-load ship-generated waste without causing undue delay to ships. The 1994 amendments make provision for ships to be inspected when in ports of other Parties to the MARPOL 73/78 to ensure that⁵⁸ essential shipboard procedures relating to maritime pollution prevention can be carried out.⁵⁹

MARPOL 73/78 is the primary convention relating to the regulation and control of ship-generated waste. It is aimed at preventing pollution from ships and covers all forms of possible pollution with

⁵¹ http://bss.sfsu.edu/chines/geog646/646F02_class7.doc

⁵² http://www.npa-pan.ca/general/links/index_e.htm

⁵³ <http://www.jgarraio.pt/catalogo/IMO/environmentdocs.htm>

⁵⁴ <http://www.wwf.org.uk/filelibrary/pdf/ceespmarine.pdf>

⁵⁵ Introduction to International Maritime Organisation. Available at <http://www.imo.org> (Accessed latest on 22,23 and 24 January 2011).

⁵⁶ Olson, P.H.. "Handling of waste in ports", Marine Pollution Bulletin, 1994

⁵⁷ Olson, P.H. "Handling of waste in ports", Marine Pollution Bulletin, 1994

⁵⁸ <http://www.euroshore.com/regulatory/>

⁵⁹ Introduction to International Maritime Organisation. Available at <http://www.imo.org> (Accessed on 22,23 and 24 January 2011).

the exception of dumping and accidental spillages.⁶⁰ MARPOL 73/78 superseded the Convention on the Prevention of Pollution by Oil 1954, (OILPOL). This was the first multilateral treaty on the control and prevention of pollution from ships. MARPOL 73/78 was formulated with the main objectives of minimizing or eliminating the adverse impact of the operations of every type of vessel, including offshore platforms and rigs, on the environment. This is to be achieved by regulating the discharge of pollutants from ships into the environment.⁶¹

MARPOL 73/78 has established discharge standards for six main groups of pollutants contained in six annexes as follows:⁶²

- Annex I: Regulations for the Prevention of Pollution by Oil came into force on 2 October 1983. Regulation 12 of Annex I states that:⁶³
“...the Government of each Party undertakes to ensure the provisions at oil loading terminals, repair ports, and in other ports in which ships have oily residues to discharge, of facilities for the reception of such residues and oily mixtures as remain from oil tankers and other ships adequate to meet the need of the ships using them without causing undue delay to ships....the reception facilities prescribed in this regulation shall be made available no later than one year from the date of entry into force of the present convention or by 1 January 1977, whichever occurs later.”
- Annex II: Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk came into force on 6 April 1987. Regulation 7 of Annex II states that:⁶⁴ *“...the Government of each Party to the Convention undertakes to ensure the provision of reception facilities according to the needs of ships using its ports, terminals or repair ports...”*
- Annex III: Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Forms came into effect in July 1992.⁶⁵
- Annex IV: Prevention of Pollution by Sewage from Ships⁶⁶ came into force on 27 September 2003.⁶⁷ Regulation 9 of Annex IV states that: *“discharge of sewage into the sea is prohibited”*.

⁶⁰ <http://www.mima.gov.my/mima/htmls/papers/pdf/apandi/waste2004.pdf>

⁶¹ Introduction to International Maritime Organisation. Available at <http://www.imo.org> (Accessed on 22, 23 and 24 January 2011).

⁶² <http://www.mima.gov.my/mima/htmls/papers/pdf/apandi/waste2004.pdf>

⁶³ Ibid.

⁶⁴ <http://www.mima.gov.my/mima/htmls/papers/pdf/apandi/waste2004.pdf>

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<http://bibemp2.us.es/turismo/turismonet1/economia%20del%20turismo/turismo%20nautico/Canadian%20Pacific%20Crui se%20ship%20industry.pdf>

- Annex V: Prevention of Pollution by Garbage from Ships came into force on 31 December 1988. Regulation 7 of Annex V states that: “...*the Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of the ships using them.*”
- Annex VI: Prevention of Air Pollution from Ships came into force on 1 November 2003.

Both Annexes I and II are compulsory whereas Annexes III, IV, V and VI are optional.⁶⁸

Governments are required to ensure the provision of port waste reception facilities at ports and terminals for the reception of ship-generated waste. The adequate provision of port waste reception facilities is not only an obligation under MARPOL 73/78, but is an essential factor in the prevention of pollution from ships.⁶⁹

2.2 The United Nations Convention on the Law of the Sea (UNCLOS III)

The law of the sea originally had its roots in customary laws and traditions. However, customary international law of the sea has proved inadequate to deal with⁷⁰ some modern problems caused by the ever-increasing and sophisticated uses of the sea including deep sea-bed mining, atomic testing, marine research, sophisticated fishing, dumping of pollutants, as well as more the traditional uses of navigation and trade. The need for codification of the law of the sea ultimately resulted in the 1982 Third United Nations Convention on the Law of the Sea (UNCLOS III). UNCLOS III became effective on 16 November 1994.⁷¹ Part XII of UNCLOS III is dedicated specifically to the protection and preservation of the marine environment⁷² and provides a comprehensive constitutional framework for the development and implementation of marine⁷³ environmental standards. Section 5 of Part XII spells out in detail the obligation of states to prevent, reduce and control the pollution of the marine environment.⁷⁴ The UNCLOS III was the first to deal with all

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<http://bibemp2.us.es/turismo/turismo.net/1/economia%20del%20turismo/turismo%20nautico/Canadian%20Pacific%20Cruise%20ship%20industry.pdf>

⁶⁷ <http://www.mima.gov.my/mima/htmls/papers/pdf/apandi/waste2004.pdf>

⁶⁸ http://www.mima.gov.my/mima/htmls/depts/profile/apandi/misc/011_waste2001.pdf

⁶⁹ <http://www.mima.gov.my/mima/htmls/papers/pdf/apandi/waste2004.pdf>

⁷⁰ Cho, Byung-Sun. "Emergence of an international environmental criminal law?", UCLA Journal of Environmental Law & Poli, Summer 2001 Issue

⁷¹ <http://www.antaq.gov.br/Portal/pdf/Palestras/SeminarioBelga/Prosecution.pdf>

⁷² <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62006J0308:EN:NOT>

⁷³ http://www.sprep.org/att/publication/000160_MarConvHandbook.pdf

⁷⁴ Submitted to World Maritime University on 2010-05-24

aspects of the law of the sea, including⁷⁵ environmental and conservation considerations. It thus has a special place in the development of contemporary international environmental law.

The UNCLOS III “*provides the international basis upon which to pursue the protection of the marine and coastal environment and its resources*”. Part XII of UNCLOS III deals with the protection and preservation of the marine environment.⁷⁶ Pollution of the marine environment from land-based sources, as⁷⁷ so often occurs in ports and harbours, is specifically dealt with in two articles, Article 207 and Article 213. Vessel-source pollution is estimated to account for approximately 12% of all marine pollution,⁷⁸ as compared to land-based and atmospheric sources (77%), ocean dumping (10%) and off-shore production (1%).⁷⁹

Article 207 states that “*States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources, including rivers, estuaries, pipelines and outfall structures, taking into account internationally agreed rules, standards and recommended practices and procedures. States shall take other measures as may be necessary to prevent, reduce and control such pollution. States shall endeavour to harmonise their policies in this connection at the appropriate regional level. States, acting especially through competent international organisations or diplomatic conference, shall endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment from land-based sources, taking into account characteristic regional features, the economic capacity of developing States and their need for economic development. Such rules, standards and recommended practices and procedures shall be examined from time to time as necessary. Laws, regulations, measures, rules, standards and recommended practices and procedures referred to in paragraphs 1, 2 and 4 shall include those designed to minimise, to the fullest extent possible, the release of toxic, harmful or noxious substances, especially those which are persistent, into the marine environment.*”

Article 213 states that:

⁷⁵ <http://internationaloceaninstitute.dal.ca/IOI2004/lecturers/N0426159.pdf>

⁷⁶ <http://pca-cpa.org/PDF/UK%20Counter%20-Memorial.pdf>

⁷⁷ Jasper, William F.. "LOST: Law of the sea treaty: although LOST would threaten American sovereignty by giving the UN cont", The New American, March 2 2009 Issue

⁷⁸ "Commentary - the 1982 United Nations Convention the Law of the Sea and the agreement on implementation", US Department of State Dispatch, Feb 1995 Issue

⁷⁹ The State of the Marine Environment. (1990) GESAMP Reports and Studies No 39. 88.

“States shall enforce their laws and regulations adopted in accordance with article 207 and shall adopt laws and regulations and take other measures necessary to implement applicable international rules and standards established through competent international organisations or diplomatic conference to prevent, reduce and control pollution of the marine environment from land-based sources”.

Thus while states have the sovereign right to exploit their natural resources pursuant to their own environmental policies,⁸⁰ under the terms of the UNCLOS III the enjoyment of such a right is linked to the responsibility to protect and preserve the marine environment, including coastal areas such as ports.⁸¹

2.3 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention), 1972

The London Convention⁸² is also important for port environmental and water quality management as it prohibits the dumping of certain hazardous material at sea. Vessel-source pollution is distinguished from dumping in that the latter is understood to exclude the disposal of wastes incidental to, or derived from, the routine or normal operation of vessels.⁸³ This definition of “dumping” is found in the primary global convention on ocean dumping, the 1972 London Dumping Convention. Dumping is *“the deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures, as well as the deliberate disposal of these vessels or platforms”*.⁸⁴ Thus, dumping is understood to mean the *deliberate* disposal into the sea from ships or aircraft⁸⁵ of waste loaded on board for this purpose, and excludes the operational discharge of oil and oily mixture through deballasting and cargo tank washings. It also includes the dumping of contaminated dredge material from ports, which requires a dumping permit. Contracting parties are required to designate an authority to deal with permits, keep records and monitor the condition of the sea.⁸⁶ The criteria governing the issues of permits is laid down in Annex III of the Convention, and includes the nature of the waste material, characteristics of the dumping site and the method of disposal.⁸⁷

⁸⁰ <http://www.iea.org/textbase/work/2006/carbon/2.pdf>

⁸¹ Available at <http://www.unep.org/unep/gpa/pol2a2.htm> (Accessed latest 23 January 2011)

⁸² <http://www.wwf.org.uk/filelibrary/pdf/ceespmarine.pdf>

⁸³ <http://tparliament.org/bills/house/2004/b2004h35p.pdf>

⁸⁴ London Dumping Convention, 1972

⁸⁵ Christopher Joyner. "Plastic pollution in the marine environment", Ocean Development & International Law, 1991

⁸⁶ <http://www.winston.com/ftp/Coast Guard Marine Safety Manual Vol IX.pdf>

⁸⁷ <http://www.mintrans.ru/pressa/Ust EIA Web Eng.pdf>

2.4 The International Association of Ports and Harbours

The International Association of Ports and⁸⁸ Harbours (IAPH) is an international non-profit, non-governmental organization involving more than 85 countries around the world.⁸⁹ It has consultative status as a non-governmental organization for the following five inter-governmental bodies whose decisions directly affect the world port community:⁹⁰

- The IMO;
- The United Nations Environment Programme (UNEP)⁹¹;
- The Economic and Social Council (ECOSOC);
- The United Nations Conference on Trade and Development (UNCTAD)⁹²; and
- The Customs Co-operative Council.

The IAPH has a special Technical Committee on Port Safety and the Environment to fulfil its obligations to the IMO and UNEP. Its objective is to monitor, collect, analyse and disseminate information on matters relating to the safety and environmental aspects in ports such as the transport, handling and storage of dangerous substances, the prevention or reduction of pollution in ports, and the management of substances originating from port activities and the shipping of substances through ports.⁹³

2.5 AGENDA 21

The internationally accepted strategy for sustainable development⁹⁴ emanated from the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. Chapter 17 of Agenda 21 deals with the management of seas and⁹⁵ oceans and elaborates on the principles of marine conservation that are provided for in the UNCLOS III Convention. It deals

⁸⁸ "PHA Executive Director Kornegay Named 1st Vice President of International Association of Ports and H", Business Wire, May 30 2003 Issue

⁸⁹ Available at <http://www.cyberplus/~iaph>. Accessed on 23 January 2011.

⁹⁰ "PHA Executive Director Kornegay Named 1st Vice President of International Association of Ports and H", Business Wire, May 30 2003 Issue

⁹¹ <http://www.earthsummit2002.org/es/national-resources/oceans.pdf>

⁹² http://www.worldtradelaw.net/fta/agreements/SACU_EFTA_Switz.pdf

⁹³ Available on <http://www.cyberplus/~iaph>. Accessed on 23 January 2011.

⁹⁴ http://smelter.csir.co.za/water_discharges_marine_main.pdf

⁹⁵ http://smelter.csir.co.za/water_discharges_marine_main.pdf

specifically with the protection of the oceans, seas and coastal areas.⁹⁶ The following are identified as major programme areas:

- Integrated management and sustainable development of coastal and marine areas, including exclusive economic zones;
- Marine environmental protection;
- Sustainable use and conservation of living marine resources of the high seas;⁹⁷
- Sustainable use and conservation of living marine resources under national jurisdiction;
- Addressing critical uncertainties for the management of the marine environment and climate change;
- Strengthening international, including regional, co-operation and co-ordination; and
- Sustainable development of small islands.⁹⁸

The main weakness of Agenda 21 is that it is not legally binding on states, and merely acts as a guideline for implementation.⁹⁹ However, at the World Coast Conference in Noordwijk in 1993, states agreed to implement the provisions of Agenda 21 and further develop the provisions in order to make them more operational.¹⁰⁰ This would include assisting developing nations financially, with technology transfer and capacity development.

⁹⁶ http://smelter.csir.co.za/water_discharges_marine_main.pdf

⁹⁷ Vallega, A.. "The coastal cultural heritage facing coastal management", *Journal of Cultural Heritage*, 200301

⁹⁸ Vallega, A. "The coastal cultural heritage facing coastal management", *Journal of Cultural Heritage*, 200301

⁹⁹ http://smelter.csir.co.za/water_discharges_marine_main.pdf

¹⁰⁰ Available at <http://www.unep.org/unep/gpa/pol2a2.htm>. (Accessed latest 23 January 2011)

CHAPTER 3: THE LEGAL REGIME

The IMO has recognised that the provision of port waste reception facilities is crucial for effective MARPOL 73/78 implementation, and the¹⁰¹ MEPC of the IMO has strongly encouraged member states, particularly those parties to the MARPOL 73/78 as port states, to fulfil their treaty obligations on providing adequate port waste reception facilities.¹⁰² Governments have also been urged to respond to a questionnaire on alleged inadequacy of port waste reception facilities¹⁰³ and to report their experiences to the MEPC with the aim of identifying problem areas and developing a future action plan.¹⁰⁴ MARPOL 73/78, as the paramount instrument regulating vessel-source marine pollution, vests flag states with the primary responsibility of ensuring compliance with international pollution standards. Every state thus has a general duty to ensure that ships which fly its flag or which are under its control comply with MARPOL 73/78¹⁰⁵. With regard to the monitoring of vessel discharges, a state¹⁰⁶ having evidence of a violation cannot take unilateral action under MARPOL 73/78, but is required to relay this proof to the flag state of the vessel for¹⁰⁷ further action to be taken.¹⁰⁸ The flag state is bound to commence investigations once it receives evidence that one of its vessels has violated MARPOL 73/78 standards. Legal proceedings must be pursued if the investigation turns up sufficient incriminating evidence. In punishing a vessel, the flag state must impose penalties, which are adequate in severity to discourage violations of¹⁰⁹ MARPOL 73/78 and shall be equally severe irrespective of where the violations occur.¹¹⁰ This shows that MARPOL 73/78 provides for flag states to be the primary enforcers of marine pollution standards. To the extent that flag state enforcement is an unsatisfactory mode of ensuring compliance with prescribed standards, the coastal states view MARPOL 73/78 as not having significantly improved the business of regulating vessel-source marine pollution. Doubts abound as to the efficacy of flag state jurisdiction simply because many flag states have traditionally recorded abysmal levels of diligence in implementing and enforcing international environmental standards. In large part, this can be

¹⁰¹ http://www.imo.org/Environment/mainframe.asp?topic_id=1113

¹⁰² http://www.imo.org/Environment/mainframe.asp?topic_id=1113

¹⁰³ MEPC/Circ.417. Available on <http://www.imo.org/>. (Accessed latest 23-25 January 2011)

¹⁰⁴ Available on <http://www.imo.org/>. (Accessed latest 23-25 January 2011)

¹⁰⁵ Gini Mattson[†]. "MARPOL 73/78 and Annex I: An Assessment of its Effectiveness", *Journal of International Wildlife Law & Policy*, 7/1/2006

¹⁰⁶ Erik Jaap Molenaar. "Port State Jurisdiction: Toward Comprehensive, Mandatory and Global Coverage", *Ocean Development & International Law*, 2007

¹⁰⁷ Gini Mattson[†]. "MARPOL 73/78 and Annex I: An Assessment of its Effectiveness", *Journal of International Wildlife Law & Policy*, 7/1/2006

¹⁰⁸ MARPOL, Art VI(3), *supra*, note 9, at 1324

¹⁰⁹ Gini Mattson[†]. "MARPOL 73/78 and Annex I: An Assessment of its Effectiveness", *Journal of International Wildlife Law & Policy*, 7/1/2006

¹¹⁰ MARPOL, Art IV(4), *supra*, note 9, at 1322

attributed to the proliferation of “*flags of convenience*”, which are flags of certain states whose laws render it easy and attractive for vessels owned by foreign nationals to fly these flags.

A convenience registry would typically maintain no real links with, nor control over the registered vessel, apart from the purely nominal fact of registration. From the perspective of shipowners, convenience registries afford attractive benefits like easy registration of vessels, lower taxes, reduced expenditure on safety and environmental standards, access to cheap foreign labour, and relative freedom from the control of flag states. However, the repercussions flowing from such arrangements are manifold: poor safety records, poor manning and crew conditions, low wages, and poor pollution control. The lack of flag state supervision over safety and pollution standards is often identified as the main cause of accidental collisions involving convenience fleets.¹¹¹ Even more alarming is the high rate of discharge violations committed by vessels registered with convenience registries.¹¹² In addition, flags of convenience states may not accept international conventions such as MARPOL 73/78 in the first place. Even if they are party to these conventions, convenience registries would typically have little incentive to diligently enforce international environmental standards. Due to their significant dependence on registry income, it would be unrealistic to expect convenience registries to rigorously prevent and punish violations committed by their clients. Thus, to the extent that a significant proportion of world tonnage is registered in convenience registries, one weakness of MARPOL 73/78 revolves around its very reliance on flag states as the principal enforcement agents. Of course, not all flag states operate as convenience registries, thus, not all flag states should stand accused of being irresponsible in controlling marine pollution. However, the fact remains that flag states, *be they convenience registries or otherwise*, possess little incentive in punishing vessels engaged in discharge violations. This would be especially true if discharge violations were to occur elsewhere in the world, with minimal effect on the flag state. Indeed, many flag vessels typically seldom call at their ports of registration.¹¹³

From the perspective of the coastal state interests, MARPOL 73/78 is skewed in favour of the maritime states’ interests and their preferred flag state enforcement mechanism. The ongoing challenge for MARPOL 73/78 and the international regulatory system in general, is to constantly improve on pollution control efforts by reconciling the divergent demands of the maritime and coastal states’ interests. In particular, a solution must be found to address the concerns of

¹¹¹ S Bergtrand and R Doganis, ‘The Impact of Flags of Convenience’, in *The Law of the Sea and International Shipping*, edited by WE Butler (1985), at 423

¹¹² AID Environment Report (Amsterdam), 1 IMO NEWS 8 (1994)

¹¹³ The Regulation of vessel-source marine pollution: Reconciling the maritime and coastal state interests. SJICL (1997) 1 p362

dissatisfied coastal states, which are increasingly seeking to impose unilateral pollution control measures. The MARPOL negotiators were keenly aware of the conflicting interests of the maritime and coastal states, including the controversy surrounding convenience fleets, but they ultimately resolved to retain the general competence of flag states over vessels, leaving to UNCLOS III the delicate task of addressing the coastal states' claims for increased jurisdiction.¹¹⁴

UNCLOS III attempts to reconcile the maritime and coastal states' interests by reaffirming and tightening the *existing* legal obligations of the flag states, whilst providing greater roles for coastal and port state jurisdiction. Under UNCLOS III, the balancing of the coastal and maritime states' interests is effected by demarcating the respective states' jurisdiction over the specific zones of the sea, the internal waters, the territorial sea, the contiguous zone, the exclusive economic zone and the high seas.¹¹⁵ Thus, each of these zones has a specific allocation of jurisdiction between coastal and flag states, with the underlying theory being that as one proceeds farther out to sea, the coastal state's interest in protecting its environment decreases, whilst the maritime state's interest in navigational freedom increases. Where the prescription of specific pollution control measures is concerned, it is to be noted that instead of enumerating new standards for particular forms of pollution, UNCLOS III proclaims a *general* regime of powers and duties, building upon the codification and development of *existing* pollution control conventions. The Convention is riddled with references to an oft-recurring phrase, "*generally accepted international rules and standards*", which in the context of¹¹⁶ vessel-source pollution¹¹⁷, is well understood by the international community to mean the comprehensive provisions of MARPOL 73/78.¹¹⁸

With regard to flag state obligations, the regulatory provisions of Article 211 (2) of UNCLOS III states that: "*States shall adopt laws and regulations for the prevention, reduction and control of pollution of the marine environment from vessels flying their flag or of their registry. Such laws and regulations shall at least have the same effect as that of generally accepted international rules and standards established through the competent international organization or general diplomatic conference*". This Article reaffirms the obligations of flag states to adopt laws and regulations

¹¹⁴ The Regulation of vessel-source marine pollution: Reconciling the maritime and coastal state interests. SJICL (1997) 1 p363

¹¹⁵ <http://www.turkish-shipping.com/haber/haberler.php?haber=7>

¹¹⁶ Tatjana Keselj. "Port State Jurisdiction in Respect of Pollution from Ships: The 1982 United Nations Convention on the Law of the Sea and the Memoranda of Understanding", Ocean Development & International Law, 6/1/1999

¹¹⁷ "Commentary - the 1982 United Nations Convention the Law of the Sea and the agreement on implementation", US Department of State Dispatch, Feb 1995 Issue

¹¹⁸ The Regulation of vessel-source marine pollution: Reconciling the maritime and coastal state interests. SJICL (1997) 1 p363 - 364

consistent with the vessel-source pollution¹¹⁹ standards laid down by the existing conventions. Specifically, flag states are required to adopt laws and regulations for the prevention, reduction and control of pollution of the marine environment from vessels flying their flag or of their registry.¹²⁰

Further, flag states have an obligation to *enforce* the legislation, which implements international standards.¹²¹ UNCLOS III, Art 217(2), (4), (5), (6), (7) and (8) states as follows:

“(2) States shall, in particular, take appropriate measures in order to ensure that vessels flying their flag or of their registry are prohibited from sailing, until they can proceed to sea in compliance with the requirements of the international rules and standards referred to in paragraph 1, including requirements in respect of design, construction, equipment and manning of vessels.

(4) If a vessel commits a violation of rules and standards established through the competent international organization or general diplomatic conference, the flag State, without prejudice to articles 218, 220 and 228, shall provide for immediate investigation and where appropriate institute proceedings in respect of the alleged violation irrespective of where the violation occurred or where the pollution caused by such violation has occurred or has been spotted.

(5) Flag States conducting an investigation of the violation may request the assistance of any other State whose cooperation could be useful in clarifying the circumstances of the case. States shall endeavour to meet appropriate requests of flag States.

(6) States shall, at the written request of any State, investigate any violation alleged to have been committed by vessels flying their flag. If satisfied that sufficient evidence is available to enable proceedings to be brought in respect of the alleged violation, flag States shall without delay institute such proceedings in accordance with their laws.

(7) Flag States shall promptly inform the requesting State and the competent international organization of the action taken and its outcome. Such information shall be available to all States.

¹¹⁹ <http://www.sjofartsverket.se/pages/13880/LEG-MISC-4.pdf>

¹²⁰ D Dzidzornu and M Tsamenyi, ‘Enhancing International Control of Vessel-Source Oil Pollution under the Law of the Sea Convention, 1982: A Reassessment’, (1991) 10 U Tas LR 269. Wonham, J.. "Some recent regulatory developments in IMO for which there are corresponding requirements in the United Nations convention on the law of the sea. A challenge to be met by the states parties?", Marine Policy, 199609

¹²¹ UNCLOS III, Art 217(2),(4),(5), (6), (7) and (8).

(8) Penalties provided for by the laws and regulations of States for vessels flying their flag shall be adequate in severity to discourage violations wherever they occur.”

If properly adhered to, these obligations would have greatly enhanced the effectiveness of flag state jurisdiction¹²², especially in remedying the recalcitrance of flags of convenience vessels. It must be noted however, that these provisions are not substantially more stringent than those already laid down in the existing treaties, particularly MARPOL 73/78. In fact, the very premise of the UNCLOS III regulatory structure lies in its reiteration of standards contained in existing treaties. The problem has always lain in ensuring flag state compliance with these prescribed standards, and in securing the cooperation of all flag states to diligently prosecute offending vessels. To the extent that this problem with flag states remains unresolved, the affirmation of flag states obligations does little to improve upon the regulation of vessel-source marine pollution.¹²³

In order to assist states to comply with MARPOL 73/78 obligations, the MEPC of the IMO¹²⁴ prepared guidelines which contain information for the provision and improvement of port waste reception facilities and¹²⁵ are designed to complement the IMO's *Comprehensive Manual on Port Reception Facilities*.¹²⁶ The Guidelines contribute substantially to the ultimate aim of MARPOL 73/78 to achieve the complete elimination of intentional pollution of the marine environment.¹²⁷ They provide information relating to the ongoing management of existing facilities, as well as for the planning and establishment of new facilities. They are also intended to encourage¹²⁸ states to provide adequate port waste reception facilities and ships to make more effective use of these facilities.¹²⁹

The main objective of the Guidelines is to remind states that the waste arises from all marine activities: commercial, fishing and recreational, and that each activity requires specific attention. In particular the Guidelines are intended to¹³⁰:

¹²² Cot, Jean-Pierre. "Pollution in the EEZ - municipal court proceedings to impose penalties in case of violation of appli", *American Journal of International Law*, April 2010 Issue

¹²³ Note that the IMO has established a new Sub-Committee on Flag State Implementation to improve the level of enforcement and implementation by the flag states, 3 IMO NEWS 3(1992)

¹²⁴ Resolution MEPC. 83(44), adopted on 13 March 2000

¹²⁵ http://www.imo.org/Newsroom/mainframe.asp?topic_id=144&doc_id=737

¹²⁶ IMO publication IMO-597E

¹²⁷ http://www.imo.org/newsroom/mainframe.asp?topic_id=109&doc_id=357

¹²⁸ http://www.imo.org/newsroom/mainframe.asp?topic_id=109&doc_id=357

¹²⁹ Guide to good practice for port reception facility providers and users, MEPC.1/Circ.671 20 July 2009 p1

¹³⁰ Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities (Resolution MEPC. 83(44) sections 3.2 and 3.3.

“Assist States in planning and providing adequate port waste reception facilities; and encourage States to develop environmentally appropriate methods of disposing ships’ wastes ashore.”

3.1 Legal obligation

States party to UNCLOS III ¹³¹ and MARPOL 73/78¹³² have a legal obligation to tackle the problems associated with the illegal discharge of ship-generated wastes from all types and sizes of ships, including sailing boats. Marine pollution is indiscriminate. It is trans-boundary by its nature. Its effects have repercussions on a global scale. The illegal discharge of oil for example, has a detrimental effect on the marine and coastal environment. Oil may wash ashore far away from its point of discharge. There is no doubt that pollution resulting from shipping activities, by means of oil from accidental super tanker spillages and from normal discharges has, for a considerable span of time, given rise to vigorous marine pollution control legislation.¹³³

UNCLOS III provides that:

“States have a general obligation to protect and preserve the marine environment (Article 192). States have a duty to take measures, using the best practicable means at their disposal and in accordance with their capabilities, to minimise to the fullest possible extent pollution from ships, in particular measures for preventing intentional and unintentional discharges (Article 194); and Flag States have a duty to adopt laws and regulations which have at least the same effect as that of generally accepted international rules and standards established through IMO” (Article 211 (2)).

UNCLOS III and MARPOL 73/78 establish a framework of rights and duties.

Parties to MARPOL 73/78 have general obligations:¹³⁴

- Parties to ensure that ships flying their flag do not discharge wastes into the sea; and¹³⁵
- The provision of port waste reception facilities¹³⁶.

¹³¹ Article 194, United Nations Conference on the Law of the Sea, 1982

¹³² Article 1, International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto

¹³³ Ramanlal Soni. Control of Marine Pollution in International Law. Juta & Company LTD 1985 p 172

¹³⁴ Regulation 12 of Annex I, Regulation 7 of Annex II, Regulation 12 of Annex IV, Regulation 7 of Annex V and Regulation 17 of Annex VI

¹³⁵ <http://www.unep.org/regionalseas/marinelitter/publications/workshops/nowpap/0051.asp>

¹³⁶ <http://www.unep.org/regionalseas/marinelitter/publications/workshops/nowpap/0051.asp>

The general rights are:¹³⁷

- Not being polluted by ships from other parties¹³⁸ and can prosecute; and
- The penalties shall be adequate in severity to discourage violations of the Convention and shall be equally severe irrespective of where the violations occur.

Coastal states have the right to¹³⁹ prohibit polluting discharges from foreign and domestic shipping in their coastal zones. If they exercise this right, they have a duty/obligation to ensure the provision of adequate port waste reception facilities for ship-generated¹⁴⁰ wastes in their ports. This duty is explicit in MARPOL 73/78¹⁴¹. It is implicit in UNCLOS that each right also entails a duty.¹⁴²

States party to MARPOL 73/78 have specifically undertaken to ensure the provision of adequate waste reception facilities in¹⁴³ their ports. Most states have delegated this duty to their ports industry or to other public or private bodies, but states retain the ultimate responsibility for ensuring that their undertaking is fulfilled.¹⁴⁴ The use and provision of port waste reception facilities is fundamental to the overall success of MARPOL 73/78¹⁴⁵, in its objective of reducing and ultimately eliminating intentional pollution of the marine environment by ships.¹⁴⁶ To succeed in this objective, mariners must be provided with the means to dispose of ships' waste ashore. The *adequacy of the port waste reception facilities*¹⁴⁷ as used in the MARPOL 73/78 Annexes, means that port reception facilities must meet the needs of ships using the ports without causing undue delay.¹⁴⁸ This is also covered in Section 3 of the Guidelines, *How to Achieve Adequacy*, or section 2.3.1 of the Comprehensive Manual on Port Reception Facilities (1999). Section 3.2 of the Guidelines further states that "*adequate facilities can be defined as those which: mariners use; fully meet the needs of the ships regularly using them; do not provide mariners with a disincentive to use*

¹³⁷ Article 4 (1), (2), (3) and (4) International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto.

¹³⁸ http://www.imo.org/includes/blastDataOnly.asp/data_id%3D29282/ListofIMOCircularsbyacronymanddates.doc

¹³⁹ <http://www.unep.org/regionalseas/marinelitter/publications/workshops/nowpap/0051.asp>

¹⁴⁰ James Kraska. "Oceanographic and naval deployments of expendable marine instruments under U.S. and international law", Ocean Development & International Law, 1995

¹⁴¹ <http://www.jgarraio.pt/catalogo/IMO/environmentdocs.htm>

¹⁴² Regulation 12 of Annex I, Regulation 7 of Annex II, Regulation 12 of Annex IV, Regulation 7 of Annex V and Regulation 17 of Annex VI

¹⁴³ Article 194 refers to prevention, reduction and controlling pollution of the marine environment.

¹⁴⁴ Regulation 12 of Annex I, Regulation 7 of Annex II, Regulation 12 of Annex IV, Regulation 7 of Annex V and Regulation 17 of Annex VI

¹⁴⁵ Regulation 12 of Annex I, Regulation 7 of Annex II, Regulation 12 of Annex IV, Regulation 7 of Annex V and Regulation 17 of Annex VI

¹⁴⁶ <http://www.euroshore.com/regulatory/>

¹⁴⁷ Guide to good practice for port reception facility providers and users, MEPC.1/Circ.671 20 July 2009 p1

¹⁴⁸ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

¹⁴⁹ Guide to good practice for port reception facility providers and users, MEPC.1/Circ.671 20 July 2009 p2

them; and contribute to the improvement of the marine environment.” Additionally, Section 3.3 of the Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities¹⁴⁹ specifies that the reception facilities must “...allow for the ultimate disposal of ships’ waste to take place in an environmentally appropriate way.”

Therefore, the conditions of use of such facilities must not deter mariners from using them, either for practical or economic reasons. States failing to provide adequate reception facilities will be in breach of their MARPOL 73/78 obligations,¹⁵⁰ and will make it harder to enforce measures to combat illegal discharges at sea from shipping.

Section 3 of the Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities (Resolution MEPC.83 (44)) also concentrates on the need for adequate port reception facilities, rather than on the enforcement of international obligations. There is international recognition of the need for proper management to achieve and maintain high standards of environmental protection by all those involved in the operation of ships. To address this need, the IMO has adopted the International Safety Management (ISM) Code¹⁵¹ to develop a safety and environmental culture both ashore and on board ship. It places a responsibility on the flag state to confirm, by means of auditing, that both the shore-side management systems and the operational standards on board ships comply with the ISM Code. In addition to the requirements under UNCLOS III, MARPOL 73/78 and SOLAS¹⁵², the Code provides a link between the need for compliance with international treaty obligations and the associated responsibilities of the maritime industry. This dual approach by administrations and industry to the provision of adequate port waste reception facilities¹⁵³ should complement other measures taken by the IMO to protect the marine environment¹⁵⁴.

3.2 Achievement of adequacy

¹⁴⁹ http://www.mpa.gov.sg/sites/pdf/03_11_prevention_of_pollution_of_the_sea_oil_regulations_2006.pdf

¹⁵⁰ Regulation 12 of Annex I, Regulation 7 of Annex II, Regulation 12 of Annex IV, Regulation 7 of Annex V and Regulation 17 of Annex VI

¹⁵¹ IMO adopted the ISM Code in November 1993 through resolution A.741 (18). As from 1 July 1998 compliance with the requirements of the ISM Code is mandatory under the provisions of chapter IX of SOLAS

¹⁵² International Convention for the Safety of Life at Sea, 1974 (as amended)

¹⁵³ http://www.roadsni.gov.uk/strangford_harbour_waste_management_plan_2007.pdf

¹⁵⁴ Kiselev, V.A.. "Special areas' for preventing pollution of the sea", Marine Policy, 198807

MEPC 42 has agreed that to achieve “adequate reception facilities” the port should have regard to the operational needs of users and provide reception facilities for the types and quantities of waste from ships normally using the port¹⁵⁵. Adequate facilities can be defined as those which¹⁵⁶:

- mariners use;
- fully meet the needs of the ships regularly using them;¹⁵⁷
- do not provide mariners with a disincentive to use them; and
- contribute to the improvement of the marine environment.¹⁵⁸

The March 2000 resolution MEPC.83 (44) states that the facilities provided by the port must:

- meet the needs of the ships normally using the port; and
- allow for the ultimate disposal of ships’ waste to take place in an environmentally appropriate way.¹⁵⁹

In his presentation on the IMO’s Action Plan on tackling the inadequacy of port reception facilities in Brussels, on 14 October, 2010 slides 7-8 Nikos Mikelis concluded the following:

- “MARPOL 73/78 does not set any prescriptive standards for port reception facilities, other than requiring that these are ‘adequate’;
- The term ‘adequate’ is defined in a qualitative manner in an MEPC resolution, which is not a mandatory instrument;
- MARPOL 73/78 does not set any certification requirements for port reception facilities; and
- MARPOL 73/78 does not set any requirements for the environmentally sound management of any residues or garbage delivered to a port reception facility. Only resolution MEPC.83 (44), which is not a mandatory instrument, requires that facilities should allow for the ultimate disposal of ships’ wastes to take place in an environmentally appropriate way.”

He supported his conclusion, by making reference to the Comprehensive Manual on Port Reception Facilities, IMO, 1999 Edition which states that “*MARPOL 73/78 provisions require the government of each party to ensure the provision of adequate port reception facilities without causing undue*

¹⁵⁵ Nikos Mikelis. Presentation on IMO’s Action Plan on tackling the inadequacy of port reception facilities in Brussels 14 October 2010 slide 6. http://www.dgshipping.com/dgship/final/notices/engcir31_guidelines.doc

¹⁵⁶ Nikos Mikelis. Presentation on IMO’s Action Plan on tackling the inadequacy of port reception facilities in Brussels. 14 October 2010 slide 6

¹⁵⁷ http://www.sprep.org/att/publication/000160_MarConvHandbook.pdf

¹⁵⁸ “PSSA Designation and Implementation of the PSSA Guidelines by the IMO”, Marine Environment Protection and Biodiversity Conservation, 2007

¹⁵⁹ Nikos Mikelis. Presentation on IMO’s Action Plan on tackling the inadequacy of port reception facilities in Brussels. 14 October 2010 slide 6

delay. A port reception facility is anything which can receive shipboard residues and mixtures containing oil, noxious liquids, or garbage. Type and size of the facility depend on the needs of the ships visiting a port. Where a simple garbage bin and a barrel for waste oil may suffice in a small port, another will need large storage tanks for the reception of residues and mixtures containing oil or noxious liquids."

3.3 Planning port waste reception facilities

MARPOL 73/78 provided that states have an ongoing obligation to ensure the provision of adequate waste reception facilities in their ports¹⁶⁰. States intending to become parties to MARPOL 73/78 will also be bound by the same obligations in accordance with the requirements of the following regulations:

- Regulation 12 of Annex I (Reception facilities);
- Regulation 7 of Annex II (Reception facilities and cargo unloading terminal arrangements);
- Regulation 12 of Annex IV (Reception facilities);
- Regulation 7 of Annex V (Reception facilities); and
- Regulation 17 of Annex VI (Reception facilities).

Section 3 of the Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities¹⁶¹ states that the mere provision of facilities, which are then not fully utilised, does not necessarily mean they are adequate¹⁶². The obligation to provide adequate facilities covers all ports, terminals, harbours and marinas visited by commercial shipping and other types of vessels¹⁶³. However, it should be noted that some port authorities might face particular problems meeting this obligation. Therefore the port waste management planning¹⁶⁴ process is particularly useful. The effort made by the port to ensure the provision of adequate facilities¹⁶⁵ should be commensurate with the quantities and variety of waste to be delivered ashore¹⁶⁶. Poor location, complicated procedures, restricted availability and unreasonably high costs for the service provided¹⁶⁷, are all factors which may deter the use of the port waste reception facilities¹⁶⁸.

¹⁶⁰ Regulation 12 of Annex I, Regulation 7 of Annex II, Regulation 12 of Annex IV, Regulation 7 of Annex V and Regulation 17 of Annex VI

¹⁶¹ http://www.mpa.gov.sg/sites/pdf/03_11_prevention_of_pollution_of_the_sea_oil_regulations_2006.pdf

¹⁶² http://www.dgshipping.com/dgship/final/notices/engcir31_guidelines.doc

¹⁶³ <http://www.unep.org/regionalseas/marinelitter/publications/workshops/nowpap/0051.asp>

¹⁶⁴ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

¹⁶⁵ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

¹⁶⁶ <http://www.unep.org/regionalseas/marinelitter/publications/workshops/nowpap/0051.asp>

¹⁶⁷ http://www.dgshipping.com/dgship/final/notices/engcir31_guidelines.doc

¹⁶⁸ http://www.dgshipping.com/dgship/final/notices/engcir31_guidelines.doc

3.4 Enforcement and Compliance

Flag and port states should be able to demonstrate that they fulfil the requirements of MARPOL 73/78 obligations by ensuring that the obligation to provide adequate port waste reception facilities is complied with, maintained and enforced¹⁶⁹. In adopting MEPC/Circ.349 for reporting alleged inadequacies of port reception facilities, the MEPC agreed that parties to MARPOL 73/78 should fulfil their obligations under regulation 12(5) of Annex I, regulation 7(4) of Annex II and regulation 7(2) of Annex V. They can do this by ensuring that whenever ship-owners or masters identify an inherent inadequacy of port waste reception facilities they report the allegations accurately and in a timely manner *via* the ship's flag state to the IMO and to the appropriate port state authorities or port operators, using the suggested format for reporting¹⁷⁰. The IMO Secretariat should post the report in the Port Reception Facility Database (PRDF) of the IMO Global Integrated Shipping Information System (GISIS). Port states should respond to reports of inadequacies and inform the IMO and the reporting flag state¹⁷¹ of the outcome of their investigation. The IMO Secretariat should again post the port state's reply in the PRFD of the IMO GISIS¹⁷².

In order for the full benefits of the reporting system to be achieved when using the Alleged Inadequacy Reporting Form, states should take the following steps (MEPC/Circ.349):

“Where the flag State and port State are different, the flag State shall inform the port State of the alleged inadequacy and also inform the IMO. Notification shall be made as soon as possible following completion of the Alleged Inadequacy Reporting Form. Where the flag State and the Port State are the same, the marine administration should take up the matter of the alleged inadequacy directly with the port or terminal concerned. The flag State is required to notify IMO of any case where facilities are alleged to be inadequate.”

3.5 Roles and responsibilities of flag states

With regard to flag states' obligations, the regulatory provisions of Article 211 in UNCLOS III reaffirm the obligations of flag states to adopt laws and regulations consistent with the vessel-source

¹⁶⁹ Regulation 12 of Annex I, Regulation 7 of Annex II, Regulation 12 of Annex IV, Regulation 7 of Annex V and Regulation 17 of Annex VI.

¹⁷⁰ Guide to good practice for port reception facility providers and users, MEPC.1/Circ.671 20 July 2009 p6.

¹⁷¹ Submitted to World Maritime University on 2007-08-20

¹⁷² Guide to good practice for port reception facility providers and users, MEPC.1/Circ.671 20 July 2009 p6.

pollution¹⁷³ standards laid down by the existing conventions. Specifically, flag states are required to adopt laws and regulations for the prevention, reduction and control of pollution of the marine environment from vessels flying their flag or of their registry. Such laws and regulations “shall at least have the same effect as” that of generally accepted international rules and standards, established through the competent international organization or general diplomatic conference¹⁷⁴. Consequently, once a particular standard gains international acceptance, for instance, provisions within MARPOL 73/78, a flag state has an obligation under UNCLOS III to implement that standard through its national laws, regardless (arguably) of whether that flag state is a party to the particular convention which established that standard. This will have a great impact on convenience registries that ratify UNCLOS III but do not ratify the other IMO Conventions. In addition, since their regulations must have “*at least*” the same effect as generally accepted international standards¹⁷⁵, flag states may presumably apply higher standards should they so desire¹⁷⁶.

Further, flag states have an obligation to *enforce* the legislation, which implements international standards. In particular, flag states must investigate alleged violations committed by their vessels, including violations alleged by another state and institute proceedings for violations of international rules and standards, regardless of where the violation¹⁷⁷ occurs and impose penalties adequate in severity to deter violations wherever they occur¹⁷⁸. If properly adhered to, these obligations would have greatly enhanced the effectiveness of flag state jurisdiction, especially in remedying the non-cooperation of flags of convenience vessels. It must be noted however, that these provisions are not substantially more stringent than those *already* laid down in the existing treaties, particularly MARPOL 73/78. In fact, the very premise of the UNCLOS III regulatory structure lies in its emphasis of standards contained in existing treaties. The problem has been in ensuring flag state *compliance* with these prescribed standards, and in securing the cooperation of all flag states to diligently prosecute offending vessels¹⁷⁹. To the extent that this problem with flag states remains unresolved, the affirmation of flag states’ obligations does little to improve the regulation of ship-generated waste¹⁸⁰.

¹⁷³ <http://www.sjofartsverket.se/pages/13880/LEG-MISC-4.pdf>

¹⁷⁴ UNCLOS III, Art 211(2). http://www.sprep.org/att/publication/000160_MarConvHandbook.pdf

¹⁷⁵ <http://www.sjofartsverket.se/pages/13880/LEG-MISC-4.pdf>

¹⁷⁶ D Dzidzomu and M Tsamenyi, ‘Enhancing International Control of Vessel-Source Oil Pollution under the Law of the Sea Convention, 1982: A Reassessment’, (1991) 10 U Tas LR 269

¹⁷⁷ “Selected documents”, Environmental Policy and Law, 197512

¹⁷⁸ UNCLOS III, Articles 217(2), (4), (5), (6), (7) and (8).

¹⁷⁹ http://www.sprep.org/att/publication/000160_MarConvHandbook.pdf

¹⁸⁰ The Regulation of vessel-source marine pollution: Reconciling the maritime and coastal state interests. SJICL (1997) 1 p365.

¹⁸⁰ Note that the IMO has established a new Sub-Committee on Flag State Implementation to improve the level of enforcement and implementation by the flag states, IMO NEWS 3 (1992).

The IMO Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities address and differentiate the roles of the flag state, port state and the IMO. There are measures that the flag state should take to ensure that its vessels comply with the requirements of MARPOL¹⁸¹ 73/78.

The flag State should:

- Provide advice to ships flying its flag;
- Examine onboard arrangements (safety and counter-pollution during inspections);
- Investigate infringements; and
- Prosecute offenders.

The flag state is in a unique position to provide port states with a regular source of detailed information, which accurately lists the inadequacies of ports visited by its vessels. Should flag states fail to provide accurate records of the inadequacies, port states and the IMO may be unable to resolve matters of alleged inadequacy as quickly as necessary. The communication process between states party to MARPOL 73/78 must be meaningful for the process to result in improvements in the provision of waste reception facilities¹⁸². It therefore follows that flag states must take the responsibility of ensuring that appropriate measures are taken to report matters of inadequacy. Port states will be unable to take the necessary action against their ports without appropriate information.

3.6 Roles and responsibilities of port states

Port states should ensure that domestic legislation provides suitable powers and infrastructure to implement, administer and enforce MARPOL 73/78. Those who fail to comply with appropriate domestic legislation should be open to prosecution by the port state. Port states must take the ultimate responsibility of ensuring that adequate port waste reception facilities are available¹⁸³ to ships calling at their ports. Port states shall ensure the provision of port waste reception facilities that are adequate¹⁸⁴ and capable of handling the discharge of waste from regular port users. Port

¹⁸¹ Submitted to World Maritime University on 2010-08-26

¹⁸² Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

¹⁸³ Georgakellos, D.A.. "The use of the deposit-refund framework in port reception facilities charging systems", Marine Pollution Bulletin, 200705

¹⁸⁴ <http://www.shipping.dft.gov.uk/pwmp/pwm01.htm>

states should also ensure the provisions of proper arrangements to consider and respond appropriately and effectively to reports of inadequacies.¹⁸⁵

The position prior to UNCLOS III was that port states into whose ports the offending vessel had entered only had jurisdiction over violations committed in or affecting the port state's territorial sea. Otherwise, port states could never exercise jurisdiction for offences committed *outside* their territorial sea. At the UNCLOS III negotiations, increased port state jurisdiction emerged as the preferred solution over the expansion of coastal states' jurisdiction, primarily because the former presented fewer impediments to navigation¹⁸⁶. UNCLOS III effected a compromise by empowering port states with jurisdiction over discharge violations *occurring on the high seas or in the waters of other states*¹⁸⁷. This scheme would ostensibly serve to allay the concerns of coastal states that flag states can never be relied upon to diligently prosecute offending vessels. At the same time, it guaranteed the maritime interests that vessel navigation would not be capriciously tinkered with by the coastal states. A port state may thus conduct inspections and institute proceedings against vessels for discharges on the high seas in violation of "applicable international rules and standards". Proceedings may also be instituted in the port state in respect of a violation occurring in another state's waters, at the request of that state, the flag state or any other injured state¹⁸⁸.

3.7 Roles and responsibilities of the IMO

The IMO was established by the United Nations in 1958, when the 1948 Convention on the Inter-Governmental Maritime Consultative Organisation entered into force. It was established specifically to promote marine safety, which had been an area of concern since the mid-19th century¹⁸⁹. The IMO is the international regulatory body, which is entrusted with the task of overseeing and coordinating matters of maritime safety, efficiency of navigation and the prevention of marine pollution. In the realm of marine environmental protection, the IMO has sponsored numerous diplomatic conferences aimed at the regulation and control of ship-generated waste. These conferences produced conventions and treaties, which set out generally accepted international pollution standards. These standards are commonly classified as discharge standards, navigation

¹⁸⁵ Submitted to World Maritime University on 2007-08-20

¹⁸⁶ The Regulation of vessel-source marine pollution: Reconciling the maritime and coastal state interests. *SJICL* (1997) 1 p 374.

¹⁸⁷ Christian Pisani. "Fair at Sea: The Design of a Future Legal Instrument on Marine Bunker Fuels Emissions within the Climate Change Regime", *Ocean Development & International Law*, 1/1/2002

¹⁸⁸ The Regulation of vessel-source marine pollution: Reconciling the maritime and coastal state interests. *SJICL* (1997) 1 p 374

¹⁸⁹ Introduction to International Maritime Organisation. Available at <http://www.imo.org> (Accessed on 22,23 and 24 January 2011)

standards, and construction, design, equipment and manning (known cumulatively as CDEM) standards. Discharge standards regulate the permissible amount of pollutants released into the marine environment, while navigation standards prescribe ship routing measures, traffic separation schemes, and other general safety measures. CDEM standards generally relate to the seaworthiness and structural qualities of a vessel, in addition to regulating the equipment it carries and the competence of its crew¹⁹⁰.

The IMO's first task was the adoption of a new version of the International Convention for the Safety of Life at Sea (SOLAS 1960, and later SOLAS 1974). Although safety was the IMO's primary responsibility, the emerging problem of pollution of the marine environment, especially oil pollution, needed to be addressed. The most common instance of ship-generated pollution is oil pollution, whether caused intentionally during the discharge of normal shipping activities (such as the flushing of erstwhile oil-laden tankers) or arising out of accidents including collisions and stranding of titanic super tankers (such the Amoco Cadiz in March 1978, which was carrying about 230 000 tons of oil)¹⁹¹.

The IMO introduced a series of measures designed to prevent accidents, especially of ships carrying oil or other hazardous goods, and to minimize their consequences. It also addressed the environmental threat caused by routine operations such as cleaning the oil cargo tanks and disposal of engine room waste¹⁹².

The IMO does not act as an enforcement agency in response to allegations of inadequacy of port waste reception facilities. Nevertheless, the obligation for states to report alleged inadequacies to the IMO remains of value because it is in a unique position to raise matters of concern with national administrations. Under the terms of Protocol II, Parties to MARPOL 73/78 may submit their case to an arbitration procedure. Where the matter concerns the interpretation of a regulation, parties may make submissions to the MEPC¹⁹³.

¹⁹⁰ The Regulation of vessel-source marine pollution: Reconciling the maritime and coastal state interests. SJICL (1997) 1 p 360

¹⁹¹ Introduction to International Maritime Organisation. Available at <http://www.imo.org> (Accessed on 22,23 and 24 January 2011).

¹⁹² Introduction to International Maritime Organisation. Available at <http://www.imo.org> (Accessed on 22,23 and 24 January 2011). [http://greenpack.rec.org/seas and oceans/responsibility/18-05-01-01.shtml](http://greenpack.rec.org/seas%20and%20oceans/responsibility/18-05-01-01.shtml)

¹⁹³ Protocol II of MARPOL 73/78 and summarised in MARPOL – How to do it.

CHAPTER 4: APPLICABLE REGULATIONS FOR SHIP-GENERATED WASTE

4.1 MARPOL 73/78 Annex I Regulations for the Prevention of Pollution by Oil

Annex I of MARPOL 73/78 is a compulsory Annex entered into force on 2 October 1983. Regulation 2 of Annex I states that *"the provisions of this Annex shall apply to all ships to which MARPOL 73/78 applies"*. Regulation 1 of Annex I defines Oil as follows: *"Oil means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products (other than petrochemicals which are subject to the provisions of Annex II of the Convention)"*¹⁹⁴..... *Oily mixture means a mixture with any oil content. Oil fuel means any oil used in connection with the propulsion and auxiliary machinery of the ship in which such oil is carried. Oil tanker means a ship constructed or adapted primarily to carry oil in bulk in its cargo spaces and includes combination carriers and any 'chemical tanker' as defined in Annex II of the present Convention when it is carrying a cargo or part cargo of oil in bulk."*¹⁹⁵

The 1973 Convention maintained the oil discharge criteria prescribed in the 1969 amendments to the 1954 Oil Pollution Convention, namely, that operational discharges of oil from tankers are allowed only when all of the following conditions are met¹⁹⁶:

- the total quantity of oil which a tanker may discharge in any ballast voyage whilst under way must not exceed 1/15,000 of the total cargo carrying capacity of the vessel;
- the rate at which oil may be discharged must not exceed 60 litres per mile travelled by the ship; and
- no discharge of any oil whatsoever must be made from the cargo spaces of a tanker within 50 miles of the nearest land¹⁹⁷.

An oil record book is required, in which is recorded the movement of cargo oil and its residues from loading to discharging on a tank-to-tank basis. In addition, in the 1973 Convention, the maximum quantity of oil permitted to be discharged on a ballast voyage of new oil tankers was reduced from 1/15,000 of the cargo capacity to 1/30,000 of the amount of cargo carried. These criteria applied

¹⁹⁴ http://www.sprep.org/att/publication/000160_MarConvHandbook.pdf

¹⁹⁵ MARPOL 73/78 Annex I Regulation 1(1). [http://www.legislation.sa.gov.au/LZ/C/A/Protection of marine waters prevention of pollution from Ships Act 201987/2001.12.05/1987.56.pdf](http://www.legislation.sa.gov.au/LZ/C/A/Protection%20of%20marine%20waters%20prevention%20of%20pollution%20from%20ships%20Act%201987/2001.12.05/1987.56.pdf)

¹⁹⁶ MARPOL 73/78 Annex I Regulations for the prevention of pollution by oil. A selection of articles previously published by Gard AS. April (2010) p5

¹⁹⁷ <http://www.euroshore.com/regulatory/>

equally both to persistent (black) and non-persistent (white) oils.¹⁹⁸ The 1973 Convention recognized the load on top (LOT) system, which had been developed by the oil industry in the 1960s. On a ballast voyage the tanker takes on ballast water (departure ballast) in dirty cargo tanks. Other tanks are washed to take on clean ballast. The tank washings are pumped into a special slop tank. After a few days, the departure ballast settles and oil flows to the top. The clean water beneath is then decanted while new arrived ballast water is taken on. The upper layer of the departure ballast is transferred to the slop tanks.¹⁹⁹ After further settling and decanting, the next cargo is loaded on top of the remaining oil in the slop tank, hence the term 'load on top'²⁰⁰.

An important feature of the 1973 Convention was the concept of "special areas" which are considered to be so vulnerable to pollution by oil that oil discharges within them have been completely prohibited, with minor and well defined exceptions²⁰¹. This involves the fitting of appropriate equipment, including an oil discharge monitoring and control system, oily water separating equipment and a filtering system, slop tanks, sludge tanks, piping and pumping arrangements. The following are special areas adopted within MARPOL 73/78 Annex I:

- Mediterranean Sea;
- Baltic Sea;
- Black Sea;
- Red Sea;
- Gulf Area;
- Gulf of Aden;
- Antarctic Area;
- North West European Waters;
- Oman Area of the Arabian Sea; and
- Southern South African Waters²⁰².

The new oil tankers are required to meet certain subdivision and damage stability requirements so that, in any loading conditions, they can survive after damage by collision or stranding. The

¹⁹⁸ <http://www.euroshore.com/regulatory/>

¹⁹⁹ <http://www.euroshore.com/regulatory/>

²⁰⁰ Marpol Annex I Regulations for the prevention of pollution by oil. A selection of articles previously published by Gard AS. April (2010) p5. <http://www.euroshore.com/regulatory/>

²⁰¹ <http://www.euroshore.com/regulatory/>

²⁰² MARPOL 73/78 Annex I Regulation 10 (1). http://www.imo.org/includes/blastDataOnly.asp/data_id%3D19508/9536-WMD.pdf

Protocol of 1978 made a number of changes to Annex I of the parent convention.²⁰³ Segregated ballast tanks (SBTs) are required on all new tankers of 20,000 dwt and above. The Protocol also required SBTs to be protectively located, that is, they must be positioned in such a way that they will help protect the cargo tanks in the event of a collision or grounding. Another important innovation concerned crude oil washing (COW), which had been developed by the oil industry in the 1970s and offered major benefits. Under COW, tanks are washed not with water but with crude oil from the cargo itself. COW was accepted as an alternative to SBTs on existing tankers and is an additional requirement on new tankers²⁰⁴.

Drainage and discharge arrangements were also altered in the Protocol, and regulations for improved stripping systems were introduced. Some oil tankers operate solely in specific trades between ports, which are provided with adequate reception facilities. Others do not use water as ballast²⁰⁵. The TSPP Conference recognized that such ships should not be subject to all MARPOL 73/78 requirements and they were consequently exempted from the SBT, COW and CBT requirements. It is generally recognized that the effectiveness of international conventions depends upon the degree to which they are obeyed and this in turn depends largely upon the extent to which they are enforced.²⁰⁶ The 1978 Protocol to MARPOL therefore introduced stricter regulations for the survey and certification of ships. The 1992 amendments to Annex I²⁰⁷ made it mandatory for new oil tankers to have double hulls and it introduced a phase- in schedule for existing tankers to fit double hulls, which was subsequently revised in 2001 and 2003²⁰⁸. A revised Annex I was adopted in October 2004 and became enforceable on 1 January 2007. It provides a more user- friendly and simplified Annex I²⁰⁹.

Regulation 12 of Annex I is of great importance to this study as it deals with the provision of reception facilities for oily substances. Regulation 12 (1) of Annex I states that; *“Subject to the provisions of Regulation 10 of this Annex, the Government of each Party undertakes to ensure the provision at oil loading terminals, repair ports and in other ports in which ships have oily mixtures as remain from oil tankers and other ships adequate to meet the needs of the ships using them*

²⁰³ <http://www.euroshore.com/regulatory/?>

²⁰⁴ Marpol Annex I Regulations for the prevention of pollution by oil. A selection of articles previously published by Gard AS. April (2010) p5. <http://www.euroshore.com/regulatory/?>

²⁰⁵ <http://www.euroshore.com/regulatory/?>

²⁰⁶ <http://www.euroshore.com/regulatory/?>

²⁰⁷ <http://www.euroshore.com/regulatory/?>

²⁰⁸ [http://www.oceansatlas.com/unatlas/issues/pollutiondegradation/marpol convention/marpol seemore.htm](http://www.oceansatlas.com/unatlas/issues/pollutiondegradation/marpol%20convention/marpol%20seemore.htm)

²⁰⁹ Marpol Annex I Regulations for the prevention of pollution by oil. A selection of articles previously published by Gard AS. April (2010) p5

without causing undue delay to ships.” Regulation 12 (2) requires parties to MARPOL 73/78 to ensure provision of reception facilities for oily mixtures in the following ports:

- all ports and terminals in which crude oil is loaded into oil tankers where such tankers have immediately prior to arrival completed ballast voyage of not more than 72 hours or not more than 1,200 nautical miles;
- all ports and terminals in which oil other than crude oil in bulk is loaded at an average quantity of more than 1,000 metric tonnes per day;
- all ports having ship repair yards or tank cleaning facilities;
- all ports and terminals which handle ships provided with the sludge tanks required by regulation 17 of Annex I;
- all ports in respect of oily bilge waters and other residues, which cannot be discharged in accordance with regulation 9 of Annex I; and
- all loading ports for bulk cargoes in respect of oil residues from combination carriers which cannot be discharged in accordance with regulation 9 of Annex I²¹⁰.

In order to determine what kind of port waste reception facility is required for a specific port, it is necessary to have an estimate of both the type and the amount of oily waste²¹¹ expected at the port waste reception. The type of oily waste determines which treatment method should be applied. A first source of information is port statistics, if available. However waste records are usually not incorporated in these statistics. Therefore, information has to be collected by means of interviews and research etc. One method for obtaining oily waste data is to interview all ships’ captains calling at the port to ascertain which oily waste, and in what quantities, they would discharge to reception facilities,²¹² if these were available. When data has been obtained from port statistics and interviews, the data have to be interpreted. Based on the types and quantities of oily waste streams, a reception facility can be designed. An important design criterion is:

- the initial reception capacity (the amount that can be received from a ship without causing undue delay for the ship);
- the processing and storage capacity;
- the choice of treatment processes; and

²¹⁰ http://www.oceansatlas.com/unatlas/issues/pollutiondegradation/marpol_convention/marpol_seemore.htm

²¹¹ http://www.dgshipping.com/dgship/final/notices/engcir31_guidelines.doc

²¹² http://www.dgshipping.com/dgship/final/notices/engcir31_guidelines.doc

- recycling and disposal options for the effluents from the treatment facility²¹³.

Ships over 400 tons are allowed to discharge their bilge water at sea through an approved oil-water separator with a maximum effluent oil content of 15 ppm, and will therefore usually only discharge bilge oil to port waste reception facilities. For ships under 400 tons and ships which have not discharged their bilge water at sea, the bilge water²¹⁴ will amount to 1-10m³.

4.2 Annex II of MARPOL 73/78 Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk

This Annex applies to all ships carrying noxious liquid substances in bulk.²¹⁵ The compulsory Annex II came into effect on 6 April 1987. The two International Conventions with Regulations governing the carriage of chemicals by ship are the SOLAS Chapter VII and the MARPOL 73/78. The following Regulations cover chemicals carried in bulk, on chemical tankers, and chemicals carried in packaged form:

- Revised MARPOL Annex II;
- Transport of vegetable oils;
- Regulations covering chemicals carried in bulk;
- Chemicals carried in packaged form;
- Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Liquid Substances; and
- Preparedness and response dealing with pollution incidents involving chemicals²¹⁶.

Both Conventions require chemical tankers built after 1 July 1986 to comply with the International Bulk Chemical Code (IBC Code) which provides international standards for the safe transport by sea in bulk of liquid dangerous chemicals, by prescribing the design and construction standards of ships involved in such transport and the equipment they should carry so as to minimize the risks to the ship, its crew and to the environment, having regard to the nature of the products carried²¹⁷. The basic philosophy is one of ship types related to the hazards of the products covered by the Codes. Each of the products may have one or more hazard properties, which includes flammability,

²¹³ Comprehensive Manual on the Port Reception facilities.

²¹⁴ http://www.dgshipping.com/dgship/final/notices/engcir31_guidelines.doc

²¹⁵ MARPOL 73/78 Annex II Regulation (2) I.

²¹⁶ http://www.imo.org/Environment/mainframe.asp?topic_id=236

²¹⁷ http://www.imo.org/Environment/mainframe.asp?topic_id=236

toxicity, corrosiveness and reactivity. The IBC Code lists chemicals and their hazards and provides both the ship type required to carry that product as well as the environmental hazard rating. Chemical tankers constructed before 1 July 1986 should comply with the requirements of the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code), the predecessor of the IBC Code. MARPOL73/78 Annex II grades “noxious liquid substances carried in bulk” into four categories graded A to D, according to the hazard they present to marine resources, human health or amenities, **(note the revised categories from 01 January 2007)**²¹⁸.

The regulations were the first to address operational discharges of chemicals from operations such as tank washing. However, the regulations required governments to ensure that port waste reception facilities would be available to receive chemical residues. This was seen as a sticking point at the 1973 Conference as states adopted the Convention²¹⁹. Commenting on the Annex II regulations in 1974, the Oil Companies International Marine Forum (OCIMF) said:

*“The provisions of Annex II for control of noxious liquid substances in bulk represent an entirely new set of requirements for previously uncontrolled discharges which may well cause Governments concern as to their ability to comply with its requirements. However, the essential shipboard requirements are operational in character and were developed largely by specialists in the operation of chemical tankers. Therefore it is believed that the procedures needed to assure a high degree of compliance may be evolved in a relatively expeditious fashion. Perhaps the most difficult aspect of compliance will be concerned with the collection and eventual disposal of residues from reception facilities, which must be created for this purpose. As contrasted with the reception facilities required for tankers and other ship residues, the facilities required in the chemicals trade may initially be relatively small in number and volume but they represent a much more difficult technical problem”*²²⁰.

In contrast with Annex I, which was based on the premise that all oils are harmful substances and should be prevented from entering the sea, Annex II recognized the wide diversity in physical and biological properties of the substances it covered. As a result, the substances were divided into four categories graded A to D, according to the hazard they present to marine resources, human health or amenities. Category A substances are those posing the greatest threat to the marine environment, whilst Category D substances are those posing the smallest threat. Annex II prohibits the discharge

²¹⁸ http://www.imo.org/Environment/mainframe.asp?topic_id=236

²¹⁹ Focus on IMO, MARPOL 25 years.

²²⁰ MEPC II/Inf 10 p12.

into the sea of any effluent containing substances falling into these categories except when the discharge is made under conditions which are specified in detail for each category²²¹ (MARPOL - *How to do it*). More stringent discharge criteria are provided for certain sea areas identified as “special areas”. Special area means a sea area where for recognised technical reasons in relation to its oceanographic and ecological condition and to the particular character of its traffic the adoption of special²²² mandatory methods for the prevention of sea pollution by noxious liquid substances is required²²³.

For the purposes of this Annex, Special areas shall be:

- the Baltic Sea area;
- the Black Sea area; and
- the Antarctic area²²⁴.

The categorization and listing of noxious liquid substances is clearly covered under Regulation 3 of Annex II as follows: **(note the revised categories from 1 January 2007)**

4.2.1 Category A:

Noxious liquid substance which, if discharged into the sea from the tank cleaning or deballasting operations, would present a major hazard to either marine resources or human health or cause serious harm to amenities or other legitimate uses of the sea and therefore justify the application of stringent anti-pollution measures²²⁵.

4.2.2 Category B:

Noxious liquid substances which, if discharged into the sea from tank cleaning or deballasting operations, presenting a hazard to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea and therefore justify the application of special anti-pollution measures²²⁶.

²²¹ http://www.sname.org/committees/tech_ops/O44/imo/mepc/52-24-add-1.pdf

²²² <http://www.imo.org/includes/blastDataOnly.asp/data/D2692/ShippingPollutionAct-Final.pdf>

²²³ MARPOL 73/78 Annex II Regulation I (7)

²²⁴ MARPOL 73/78 Regulation I (7)

²²⁵ [http://www.legislation.sa.gov.au/LZ/C/A/Protection of Marine Waters \(Prevention of Pollution from Ships\).pdf](http://www.legislation.sa.gov.au/LZ/C/A/Protection%20of%20Marine%20Waters%20(Prevention%20of%20Pollution%20from%20Ships).pdf)

²²⁶ [http://www.legislation.sa.gov.au/LZ/C/A/Protection of Marine Waters \(Prevention of Pollution from Ships\).pdf](http://www.legislation.sa.gov.au/LZ/C/A/Protection%20of%20Marine%20Waters%20(Prevention%20of%20Pollution%20from%20Ships).pdf)

4.2.3 Category C:

Noxious liquid substances which if discharged into the sea from the tank cleaning or deballasting operations would present minor harm to either marine resources or human health or cause minor harm to amenities or other legitimate uses of the sea and therefore require special operational conditions²²⁷.

4.2.4 Category D:

Noxious liquid substances which if discharged into the sea from the tank cleaning or deballasting operations would present a recognizable hazard to either marine resources or human health or cause minimal harm to amenities or other legitimate uses of the sea and therefore require some attention in operational conditions²²⁸.

The Annex also listed "other liquid substances" deemed to fall outside Categories A, B, C or D and therefore representing no harm when discharged into the sea from tank cleaning or ballasting operations. These substances included coconut oil, ethyl alcohol, molasses, olive oil and wine (**note the revised categories from 1 January 2007**)²²⁹.

Revised Annex II MARPOL 73/78

The revised Annex II was adopted in October 2004 and came into effect on 1 January 2007. It includes a new four-category categorization system for noxious and liquid substances. The new categories are:

Category X: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a major hazard to either marine resources or human health and, therefore, justify the prohibition of the discharge into the marine environment²³⁰;

Category Y: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a hazard to either marine resources or human health

²²⁷ [http://www.legislation.sa.gov.au/LZ/C/A/Protection of Marine Waters \(Prevention of Pollution from Ships\).pdf](http://www.legislation.sa.gov.au/LZ/C/A/Protection%20of%20Marine%20Waters%20(Prevention%20of%20Pollution%20from%20Ships).pdf)

²²⁸ http://www.sprep.org/att/publication/000160_MarConvHandbook.pdf

²²⁹ http://www.imo.org/Environment/mainframe.asp?topic_id=236

²³⁰ http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258

or cause harm to amenities or other legitimate uses of the sea and therefore justify a limitation on the quality and quantity of the discharge into the marine environment²³¹;

Category Z: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a minor hazard to either marine resources or human health and therefore justify less stringent restrictions on the quality and quantity of the discharge into the marine environment; and²³²

Other Substances: substances which have been evaluated and found to fall outside Category X, Y or Z because they are considered to present no harm to marine resources, human health, amenities or other legitimate uses of the sea when discharged into the sea from tank cleaning or deballasting operations. The discharge of bilge or ballast water or other residues or mixtures containing these substances are not subject to any requirements of MARPOL 73/78 Annex II²³³.

The revised Annex includes a number of other significant changes. Improvements in ship technology such as efficient stripping techniques, has made possible significantly lower permitted discharge levels of certain products which have been incorporated into Annex II. For ships constructed on or after 1 January 2007 the maximum permitted residue in the tank and its associated piping left after discharge will be set at a maximum of 75 litres for products in categories X, Y and Z - compared with previous limits which set a maximum of 100 or 300 litres, depending on the product category²³⁴. Alongside the revision of Annex II, the marine pollution hazards of thousands of chemicals have been evaluated by the Evaluation of Hazardous Substances Working Group, giving a resultant GESAMP2 Hazard Profile, which indexes the substance according to its bio-accumulation, bio-degradation, acute toxicity, chronic toxicity, long-term health effects and effects on marine wildlife and on benthic habitats²³⁵. As a result of the hazard evaluation process and the new categorisation system, vegetable oils, which were previously categorised as being unrestricted will now be required to be carried in chemical tankers. The revised Annex includes, under Regulation 4 Exemptions, provision for the administration to exempt ships certified to carry individually identified vegetable oils, subject to certain provisions relating to the location of the cargo tanks carrying the identified vegetable oil²³⁶.

²³¹ http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258

²³² http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258

²³³ Available on http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258

²³⁴ Available on http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258. Accessed recently on 21 January 2011

²³⁵ Available on http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258. Accessed recently on 21 January 2011

²³⁶ http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258

Reception facilities for the Noxious Liquid Substances in Bulk:

Regulation 7 of Annex II states that “where port reception facilities for noxious liquid substances have to be provided:

- Cargo loading and unloading ports and terminals shall have facilities adequate for reception without undue delay to ships of such residues and mixtures containing noxious liquid substances as would remain for disposal from ships carrying them as a consequence of application of Annex II.
- Ship repair ports undertaking repairs to chemical tankers shall have adequate facilities for the reception of residues and mixtures containing noxious liquid substances.”

The potential type and quantities of Annex II waste have to be estimated in order to determine the capacity of a reception and treatment facility for Annex II wastes. Annex II wastes are usually not shipped in small ports or only consist of a limited amount of products. The best option is to let the receiving industries take care of their own waste, as they will know best the specific requirements of their own substances.

In terms of data collection, a first source of information is port statistics. However waste records are usually not incorporated in these statistics. One option is to let the receiving industries take care of their own waste. The main contributor of Annex II wastes to port waste reception facilities is therefore wash water resulting from tank cleaning activities. The most important source of information about the wash water amounts will be through interviews or research with tank cleaning firms, ship brokers, the producer and the consumer of the shipped chemical. The P & A manuals of chemical carriers can also provide useful information. The port’s plans for the future should also be taken into consideration. Information also has to be retrieved from ship repair yards, to determine the amounts of Annex II waste resulting from ship repair work²³⁷.

The data collected from port statistics, interviews and research have to be interpreted. A port reception facility will be designed, based on the types and quantities of Annex II waste expected. When one looks at the history of Annex II it is clear the provision of port reception facilities posed enormous challenges for the implementation of the Annex. From the 1973 MARPOL Convention, it is obvious that the way in which these noxious substances can be discharged varies according to the hazard they present. Category A substances can only be discharged into reception facilities - not

²³⁷ MARPOL- How to do it, IMO.

even residues resulting from tank cleaning can be discharged into the sea. This is permitted for other categories, but only under strict controls.

Throughout the 1978 Conference, as some observers had predicted, the requirements in Annex II made it difficult for some governments to ratify the Convention²³⁸. As a result, the 1978 Conference on Tanker Safety and Pollution Prevention agreed that Annex II would become effective three years after Annex I came into effect. This encouraged governments to ratify the Convention, which came into effect on 2 October 1983 - giving parties to the Convention until 2 October 1986 to implement the regulations. However, it soon became clear that Annex II was not only outdated in some respects but still presented considerable difficulties as far as implementation was concerned.

One of the major problems for the successful implementation of Annex II concerned port waste reception facilities, the provision of²³⁹ which was crucial to the effective implementation of the regulations. Port waste reception facilities for chemicals are more expensive and complicated than those designed for the reception of oily waste, since the waste they are required to deal with is much more varied. There is also little opportunity for recycling (as can be done with some oily waste). As a result, governments and port authorities were reluctant to provide such facilities, particularly as the Convention itself was ambiguous as to whether the port waste reception facilities should be provided²⁴⁰ in loading or unloading ports.

In 1983, the IMO Assembly had adopted procedures and arrangements for the discharge of noxious liquid substances²⁴¹, which are called for by various regulations of Annex II and these were applied on a trial basis by a number of IMO Member States. These trials showed a number of difficulties in implementing Annex II, mainly associated with the problems already outlined in the previous paragraphs.

They included the following:

- The requirements were too complex and put a heavy burden on the crew of the ship;

²³⁸ Focus on IMO –MARPOL 25 years, Oct 1998.

²³⁹ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

²⁴⁰ Submitted to University of Antwerp on 2005-05-17

²⁴¹ <http://www.worldmaritime.net/maritime-law-transport-law.shtml>

- Measures of control were very limited and compliance with the standards depended entirely upon the willingness of the crew;
- Of importance to this study is that, there was a general lack of facilities for the reception of chemical waste. Although provision of facilities themselves did not present great difficulties because the amount is small compared with oily waste, treatment of waste and ultimate disposal was a problem.

The IMO consequently prepared a number of important changes to Annex II which were formally adopted at an "expanded" meeting of the IMO's Marine Environment Protection Committee²⁴² in December 1985²⁴³.

4.3 Annex III of MARPOL 73/78 Regulations for the Prevention of Pollution by harmful substances carried by sea in packaged form

The Regulations of this Annex apply to all ships carrying harmful substances in packaged form. Harmful substances are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code²⁴⁴ (IMDG Code)²⁴⁵. Packaged form is the form of containment specific for harmful substances in the IMDG Code²⁴⁶. The lack of clear definition of harmful substances carried in packaged form initially hampered the implementation of Annex III. This was remedied by amendments to the IMDG Code²⁴⁷.

The Regulations contained in Annex III of MARPOL 73/78 were introduced to identify marine pollutants so that they could be packed and stowed on board ship in such a way as to minimize accidental pollution as well as to aid recovery by using clear marks to distinguish them from other (less harmful) cargoes²⁴⁸. Annex III is optional so that states that sign up to MARPOL 73/78 Annexes I and II are not required to adopt Annex III at the same time. Annex III received sufficient ratifications by 1991 and came into effect on 1 July 1992²⁴⁹.

²⁴² <http://www.ifsma.org/newsletters/nl51.pdf>

²⁴³ Focus on IMO, MARPOL 25 years, IMO.

²⁴⁴ http://www.rina.it/UploadedFiles/VNFTC200401_PART.pdf

²⁴⁵ MARPOL 73/78 Annex III, Regulation 1 (1.1).

²⁴⁶ MARPOL 73/78 Annex III, Regulation 1 (1.3).

²⁴⁷ http://www.rina.it/UploadedFiles/VNFTC200401_PART_F.pdf

²⁴⁸ http://www.imo.org/Environment/mainframe.asp?topic_id=235

²⁴⁹ http://www.imo.org/Environment/mainframe.asp?topic_id=235

Annex III states that "*jettisoning of harmful substances carried in package form shall be prohibited, except where necessary for the purpose of securing the safety of the ship or saving life at sea. Subject to the provisions of the present Convention, appropriate measures based on the physical, chemical and biological properties of harmful substances shall be taken to regulate the washing of leakages overboard, provided that compliance with such measures would not impair the safety of the ship and persons on board.*"²⁵⁰

There is a requirement to issue detailed standards on packaging, marking, labelling, documentation, stowage, quantity limitations, exceptions and notifications, for preventing or minimizing pollution by harmful substances²⁵¹.

Revised Annex III MARPOL 73/78

At its 55th session in October 2006, the MEPC adopted the revised MARPOL Annex III *Regulations for the prevention of pollution by harmful substances carried by sea in packaged form*. The Annex has been revised to harmonize the regulations with the criteria for defining marine pollutants which have been adopted by the UN Transport of Dangerous Goods (TDG) Sub-Committee, based on the *United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*²⁵². The main changes affecting Annex III today relate to the IMDG Code, rather than to any developments in the Annex itself. In May 1998 the MSC adopted Amendment 29 to the IMDG Code, which is aimed at bringing the Code into line with the tenth revised edition of the United Nations Recommendations on the Transport of Dangerous Goods, to come into effect on 1 January 1999, with a transitional period to 1 July 1999. Amendment 29²⁵³ also included a revised classification of marine pollutants, based on the work carried out by the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)²⁵⁴ on hazard profiles.

The IMDG Code was first adopted by the IMO in 1965 and lists hundreds of specific dangerous goods together with detailed advice on storage, packaging and transportation²⁵⁵. The Code consists of general requirements and schedules under each class of substance for individual substances or material. Dangerous goods which are also marine pollutants will have this fact clearly stated on the

²⁵⁰ MARPOL 73/78. Annex III, Regulation 7(1).

²⁵¹ MARPOL 73/78. Annex III, Regulation 1(3).

²⁵² www.imo.org and <http://www.ifsma.org/newsletters/nl51.pdf>

²⁵³ http://www.imo.org/Newsroom/mainframe.asp?topic_id=113&doc_id=366

²⁵⁴ http://www.imo.org/Newsroom/mainframe.asp?topic_id=113&doc_id=405

²⁵⁵ <http://www.imo.org/includes/blastDataOnly.asp/data/D19508/9536-WMD.pdf>

relevant schedule. Shippers will therefore have to declare their shipment as a “marine pollutant” and comply with the Code’s requirement. This will usually mean adding a special “marine pollutant” mark to the package. If a marine pollutant is not classified as dangerous it is listed under either of the two schedules, one for liquids and one for solids, in Class 9 of the IMDG Code. These pollutants will need to be declared under the proper shipping name and the packaging will have to conform with the requirements of Annex I to the IMDG Code and be marked with the proper shipping name, the UN number and the pollutant mark. The amendments extending the Code to cover marine pollutants, which came into effect in 1991, added the identifier “marine pollutant” to all substances classed as such. All packages containing marine pollutants must be marked with a standard marine pollutant mark²⁵⁶. Annex III is the only Annex without the requirement for the provision of adequate port reception facilities.

4.4 Annex IV of MARPOL 73/78 Regulations for the Prevention of Pollution by Sewage from ships

Annex IV Regulation 1 defines sewage as:

- drainage and other waste from any form of toilets, urinals and WC scuppers;
- drainage from medical premises (dispensary, sick bay, etc) *via* wash basins, wash tubs and scuppers located in such premises;
- drainage from spaces containing living animals; or
- other waste waters when mixed with the drainages defined above²⁵⁷.

The discharge of raw sewage into the sea can create a health hazard, while in coastal areas sewage can also lead to oxygen depletion and an obvious visual pollution - a major problem for countries with large tourist industries. The main sources of human-produced sewage are land-based - such as municipal sewers or treatment plants²⁵⁸. The Annex, which is optional, was to come into effect once it was accepted by 15 states where merchant fleets represent 50 percent of world tonnage²⁵⁹. By October 1998 it had been accepted by 71 countries with 42.50 percent of world tonnage (www.imo.org). The requirement for Annex IV to come into effect was that it would apply to new ships (built after the date of the coming into effect of the Annex) of **200 gross tonnage*** and new

²⁵⁶ http://www.imo.org/Environment/mainframe.asp?topic_id=235

²⁵⁷ MARPOL 73/78 Annex IV. Regulation 1 (3). <http://www.ukotcf.org/pdf/charters/Guidelines8a.pdf>

²⁵⁸ Focus on IMO- MARPOL 25 years Oct 1998, p21. http://www.imo.org/Environment/index.asp?topic_id=237

²⁵⁹ http://www.watertechonline.com/News.asp?mode=4&N_ID=23366

ships of less than **200 tons gross tonnage*** certified to carry more than **10 persons (note changes in the revised Annex IV)**. It will apply to existing ships (built before the date of the coming into effect of the Annex) **10 years** after the date of coming into effect²⁶⁰.

Annex IV Regulation 1 defines a new ship as “a ship for which the building contract is placed, or in the absence of a building contract, the keel of which is laid, or which is at a similar stage of construction, on or after the date of entry into force of this Annex or the delivery of which is three years or more after the date of entry into force of this Annex”. An existing ship is defined as “a ship which is not a new ship”.²⁶¹

According to the IMO, by October 1998, although the Annex had not come into effect, many countries imposed regulations, which were in line with its requirements, on ships visiting their coastlines to avoid damage to health and amenities from the discharge of sewage. In practice, evidence suggested that all cruise ships and large passenger ships²⁶² already had sewage treatment plants on board, so that ships were not seen as a major source of sewage pollution²⁶³. Meanwhile, an IMO Correspondence Group was working on reviewing the regulations in Annex IV with a view to updating and revising them where necessary, to encourage further ratifications²⁶⁴.

Annex IV came into effect on 27 September 2003. It contains a set of regulations regarding the discharge of sewage into the sea, ships' equipment and systems for the control of sewage discharge, the provision of facilities at ports and terminals for the reception of sewage and requirements for survey and certification²⁶⁵. Ships are required to meet certain equipment requirements and should be fitted with:

- a sewage treatment plant (Regulation 3 (1)(a)(i)); or
- a system to communicate and disinfect the sewage (Regulation 3(1)(a)(ii)); or
- a holding tank of adequate capacity (Regulation 3(1)(a)(iii)) and
- a pipeline and standard shore connection (Regulations 3(1)(a)(iv) and 11).

²⁶⁰ Focus on IMO, MARPOL 25 years Oct 1998 p22.

²⁶¹ MARPOL 73/78 Annex IV Regulation 1(1) and (2).

²⁶² http://www.watertechonline.com/News.asp?mode=4&N_ID=23366

²⁶³ http://www.watertechonline.com/News.asp?mode=4&N_ID=23366

²⁶⁴ Available on www.imo.org. Accessed on 21 January 2011.

²⁶⁵ <http://www.marinerthai.com/comms/view.php?No=6103003>

In terms of MARPOL 73/78 Annex IV Regulation 3, a survey is required and certification on a prescribed form is necessary for ships trading internationally. Ports are required to provide reception facilities for sewage from ships adequate to meet the needs of ships using them. An International Sewage Pollution Certificate (ISPP Certificate) is required for ships in international trade²⁶⁶. A certificate is not required for ships in domestic trade but may be required by the marine administration as part of the appropriate measures taken to ensure compliance with the requirement. It is generally considered that on the high seas, the oceans are capable of assimilating and dealing with raw sewage through natural bacterial action and therefore the regulations in Annex IV in MARPOL 73/78 prohibit ships from discharging sewage within a specified distance of the nearest land, unless they have in operation an approved treatment plant²⁶⁷. In terms of regulation 8, the discharge of sewage into the sea will be prohibited, except when the ship has in operation an approved sewage treatment plant or is discharging comminuted and disinfected sewage using an approved system²⁶⁸ at a distance of more than **four nautical miles** from the nearest land; or is discharging sewage which is not comminuted or disinfected at a distance of more than 12 nautical miles from the nearest land²⁶⁹.

Regulation 10 of Annex IV states that the government of each party to MARPOL 73/78 undertakes to ensure the provision of adequate reception facilities²⁷⁰ for sewage.

Revised Annex IV

A revised Annex was adopted on 1 April 2004, coming into effect on 1 August 2005. The revised Annex IV introduced changes in terms of the application of the Annex and the conditions for the discharge of sewage into the sea, which are indicated below. The revised Annex applies to new ships engaged in international voyages, of **400 gross tonnage** and above or which are certified to carry more than **15 persons**. Existing ships will be required to comply with the provisions of the revised Annex IV **five years** after the date of coming into effect of Annex IV. The Annex requires ships to be equipped with either a sewage treatment plant or a sewage comminuting and disinfecting system or a sewage holding tank. The discharge of sewage into the sea will be prohibited, except when the ship has in operation an approved sewage treatment plant or is discharging comminuted and disinfected sewage using an approved system at a distance of more than **three nautical miles**

²⁶⁶ MARPOL 73/78 Regulations 4,5 and 6.

²⁶⁷ [http://www.witts.org/Ocean wealth/oceanwealth 08 apr04/specialfetur.htm](http://www.witts.org/Ocean%20wealth/oceanwealth%2008%20apr04/specialfeature.htm)

²⁶⁸ <http://marinelog.com/DOCS/NEWSMMIV/MMIVmar25.html>

²⁶⁹ MARPOL 73/78 Regulation 8 (1) (a) and (b). <http://www.euroshore.com/regulatory/>

²⁷⁰ <http://www.mardep.gov.hk/en/msnote/pdf/msin0333anx.pdf>

from the nearest land or is discharging sewage which is not comminuted or disinfected at a distance of more than 12 nautical miles from the nearest land²⁷¹.

Revised sewage standards

At its 55th session in October 2006, the MEPC adopted revised *Guidelines on implementation of effluent standards and performance tests for sewage treatment plants*. The revised guidelines, which will apply to sewage treatment plants installed on board on or after 1 January 2010, replaced the *Recommendation on international effluent standards and guidelines for performance tests for sewage treatment plants* adopted by resolution MEPC.2 (VI) in 1976²⁷². The MEPC also adopted a standard for the maximum rate of discharge of untreated sewage from holding tanks when at a distance equal or greater than 12 nautical miles from the nearest land²⁷³.

Sewage reception facilities

This is covered under Regulation 10 of the Annex, which requires the provision of facilities at ports and terminals for the reception of sewage without causing undue delay to ships, adequate to meet the needs of the ships using them. The government of each party shall notify the IMO²⁷⁴ of all cases where the facilities provided under the Regulation are alleged to be inadequate.

4.5 Annex V of MARPOL 73/78 Regulations for the Prevention of Pollution by Garbage from Ships

In terms of Regulation 1 of Annex V, garbage is all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in the Annexes to the present Convention²⁷⁵.

The problem with Garbage:

“Garbage from ships can be just as deadly to marine life as oil or chemicals. The greatest danger comes from plastic, which can float for years. Plastics are used for a variety of marine purposes including, but not limited to packaging, ship construction, disposable eating utensils and cups,

²⁷¹ <http://marinelog.com/DOCS/NEWSMMIV/MMIVmar25.html>

²⁷² http://www.imo.org/Environment/index.asp?topic_id=237

²⁷³ <http://www.ifsma.org/newsletters/nl51.pdf>

²⁷⁴ <http://www.ukotcf.org/pdf/charters/Guidelines8a.pdf>

²⁷⁵ MARPOL 73/78 Annex V Regulation 1 (1). http://www.sprep.org/att/publication/000160_MarConvHandbook.pdf

bags, sheeting, floats, strapping bands, rope and line. Fish and marine mammals can in some cases mistake plastics for food and they can also become trapped in plastic ropes, nets, bags and other items even such innocuous items as the plastic rings used to hold cans of beer and drinks together. It is clear that a good deal of the garbage washed up on beaches comes from people on shore, holiday-makers who leave their rubbish on the beach, fishermen who simply throw unwanted refuse over the side or from towns and cities that dump rubbish into rivers or the sea. But in some areas most of the rubbish found comes from passing ships, which find it convenient to throw rubbish overboard rather than dispose of it in ports. One estimate in the early 1980s suggested that more than six million cans and 400,000 bottles were being dumped into the sea from ships every day." ²⁷⁶

For a long time, many people believed that the oceans could absorb anything that was thrown into them, but this attitude has changed along with greater awareness of the environment. Many items can be degraded by the ocean, but this process can take months or years, as the following table shows²⁷⁷:

Table 4.1: Time taken for objects to dissolve at sea

Object	Time
Paper bus ticket	2-4 weeks
Cotton cloth	1-5 months
Rope	3-14 months
Woolen cloth	1 year
Painted wood	13 years
Tin can	100 years
Aluminium can	200-500 years
Plastic bottle	450 years

Source: Hellenic Marine Environment Protection Association (HELMEPA)

Annex V received sufficient a number of ratifications to come into effect on 31 December 1988²⁷⁸ although the Annex was optional. Regulation 2 of the Annex states that: "Unless expressly provided otherwise, the provisions of this Annex shall apply to all ships". Annex V totally prohibits the disposal of plastics anywhere into the sea, and severely restricts discharges of other garbage from ships into coastal waters and²⁷⁹ "Special Areas". A special area means a sea area where for

²⁷⁶ Focus on IMO, MARPOL 25 years, Oct 1998

²⁷⁷ http://www.imo.org/environment/mainframe.asp?topic_id=297 Accessed on 21 January 2011.

²⁷⁸ http://www.imo.org/environment/mainframe.asp?topic_id=297

²⁷⁹ http://www.imo.org/environment/mainframe.asp?topic_id=297

recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea²⁸⁰ pollution by garbage is required²⁸¹. The following special areas were established under Annex V:

- the Mediterranean Sea;
- the Baltic Sea Area;
- the Black Sea area;
- the Red Sea Area;
- the Gulf area;
- the North Sea area;
- the Wider Caribbean Region; and
- the Antarctic area²⁸².

These areas have particular problems because of heavy maritime traffic or low water exchange caused by the land-locked nature of the sea concerned²⁸³.

A new regulation with the provisions to extend port state control²⁸⁴ to cover operational requirements as regards the prevention of marine pollution was adopted²⁸⁵ to the Annex in 1994 and came into effect on 3 March 1996. Like similar amendments adopted to the other MARPOL Annexes, the regulation makes it clear that port state control officers can inspect a foreign-flagged vessel²⁸⁶ "where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of pollution by garbage".

A further new Regulation 9 was adopted in 1995²⁸⁷ and became the focus of implementation and enforcement. Regulation 9 requires all ships of 400 gross tonnage and above and every ship certified to carry 15 persons or more and every fixed or floating platform engaged in exploration and exploitation of the seabed to provide a Garbage Record Book, to record all disposal and incineration operations. The date, time, position of ship, description of the garbage and the

²⁸⁰ http://www.sprep.org/att/publication/000160_MarConvHandbook.pdf

²⁸¹ MARPOL 73/78 Annex V Regulation 1(3)

²⁸² MARPOL 73/78 Annex V Regulation 5.

²⁸³ http://www.imo.org/includes/blastDataOnly.asp/data_id%3D19508/9536-WMD.pdf

²⁸⁴ Procedure for port State control adopted by IMO by resolution A.787(19).

²⁸⁵ http://www.imo.org/environment/mainframe.asp?topic_id=297

²⁸⁶ http://www.imo.org/environment/mainframe.asp?topic_id=297

²⁸⁷ http://www.imo.org/environment/mainframe.asp?topic_id=297

estimated amount incinerated or discharged must be logged and signed. The books must be kept for a period of two years after the date of the last entry²⁸⁸. This regulation does not in itself impose stricter requirements but it makes it easier to check that the regulations on garbage are being adhered to as it means ship personnel must keep track of the garbage and what happens to it. It may also prove an advantage to a ship when local officials are checking the origin of dumped garbage. If ship personnel can adequately account for all their garbage, they are unlikely to be wrongly penalized for dumping garbage when they have not done so.

Regulation 9 came into effect for new ships from 1 July 1997 but from 1 July 1998 all applicable ships built before 1 July 1997 also have to comply, as well as all ships of 400 gross tonnage and above and every ship certified to carry 15 persons or more, and every fixed or floating platform engaged in exploration and exploitation of the seabed²⁸⁹. The Regulation also requires every ship of 12 meters or more in length to display placards notifying passengers and crew of the disposal requirements of the regulation. The placards should be in the official language of the ship's flag state and also in English or French for ships travelling to other states' ports or offshore terminals²⁹⁰. Despite the entry into force of Annex V in 1988, recent surveys carried out in the United States each year have recorded up to 10 tons of garbage per mile of coastline, a record that can probably be matched in many other parts of the world. Plastic forms the biggest single item found²⁹¹. In order to persuade people not to use the oceans as a rubbish tip one needs to adopt an educative role to change the old idea that the sea can cope with anything, but it also involves much more vigorous enforcement of regulations such as Annex V²⁹².

²⁸⁸ http://www.imo.org/environment/mainframe.asp?topic_id=297

²⁸⁹ MARPOL 73/78 Annex V, Regulation 9 (3).

²⁹⁰ MARPOL 73/78 Annex V, Regulation 9 (1)(a) and (b).

²⁹¹ Available on http://www.imo.org/environment/mainframe.asp?topic_id=297 . Accessed recently on 21 January 2011

²⁹² http://www.imo.org/environment/mainframe.asp?topic_id=297

Table 4.2 Restrictions on disposal of garbage

Garbage type	All ships Outside special areas (regulation 5)	All ships In special areas (regulations 5)	Off shore platforms and ships within 500 m of them (regulation 4)
Plastics (includes synthetic ropes and fishing nets and plastic garbage bags)	Disposal prohibited	Disposal prohibited	Disposal prohibited
Floating dunnage, lining and packaging materials	25 nautical miles offshore or more	Disposal prohibited	Disposal prohibited
Paper, rags, glass, metal, bottles, crockery and similar refuse	12 nautical miles offshore or more	Disposal prohibited	Disposal prohibited
All other garbage (including paper, rags, glass, etc) comminuted or ground	3 nautical miles offshore or more	Disposal prohibited	Disposal prohibited
Food waste not comminuted or ground	12 nautical miles offshore or more	12 nautical miles offshore or more	Disposal prohibited
Food waste comminuted or ground	3 nautical miles offshore or more	12 nautical miles offshore or more	12 nautical miles offshore or more
Mixed refuse types	The more stringent requirement (regulation 3(2))		
Special areas: Mediterranean Sea, Baltic Sea, Black Sea, Gulfs area, North Sea, Antarctic, Wider Caribbean Region (regulation 5(1))			

Source: IMO: MARPOL, How to do it, p76.

Garbage Reception facilities

The Annex also obliges governments to ensure the provision of facilities at ports and terminals for the reception of garbage. Regulation 7 of Annex V states that the government of each party to MARPOL73/78 undertakes to ensure the provision of adequate reception facilities for garbage from ships using its ports and terminals. It also requires the government of each party to notify the IMO for transmission to the parties concerned of all cases where the facilities provided under this regulation are alleged to be inadequate²⁹³.

²⁹³[http://www.legislation.sa.gov.au/LZ/C/A/Protection of Marine waters \(Prevention of pollution from ships\) Act 201987/2001.12.05/1987.56.pdf](http://www.legislation.sa.gov.au/LZ/C/A/Protection%20of%20Marine%20waters%20(Prevention%20of%20pollution%20from%20ships)%20Act%201987/2001.12.05/1987.56.pdf)

CHAPTER 5: SOUTH AFRICAN AND UK PERSPECTIVE

South Africa has been a party to the MARPOL 73/78 since 1984. As a signatory, South Africa has the obligation to bring into effect not only national legislation, but also a course of action at port level to comply with the provisions of MARPOL 73/78. Maritime pollution in South Africa is governed by the Marine Pollution (Control and Civil Liability) Act, 1981 (Act No. 6 of 1981) giving effect to Civil Liability Convention, the Marine Pollution (Prevention of Pollution from Ships) Act, 1986 (Act No. 2 of 1986) giving effect to MARPOL 73/78 and the Marine Pollution (Intervention) Act, 1987 (Act No.64 of 1987) giving effect to 1969 Intervention Convention and 1973 Intervention Protocol.²⁹⁴ The Marine Pollution Act incorporates the provisions of MARPOL 73/78 into South African law. South Africa has various other statutory instruments like the Environmental Conservation Act, 1989 (Act No. 73 of 1989), the National Environmental Management Act, 1998 (Act No. 107 of 1998)²⁹⁵ (NEMA) and the Minimum Requirements for Waste Disposal by Landfill, to mention a few. The common thread in all this legislation is the notion of protecting the national natural capital and the enforcement of the enshrined ‘polluter pays’ principle²⁹⁶.

National legislation and policy need to provide a framework for governance and reflect the needs of the people. The overarching legislation in South Africa is the Constitution of the Republic of South Africa adopted in 1996. Section 24 of the Bill of Rights of the South African Constitution states that:

“Everyone has the right:

- To an environment that is not harmful to their health or well being; and
- To have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that -
 - Prevent pollution and ecological degradation;
 - Promote conservation; and
 - Secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development.”²⁹⁷

²⁹⁴ <http://www.icm.noaa.gov/country/safrica/safrica.html>

²⁹⁵ <http://www.pmg.org.za/bills/0510b34-05.pdf>

²⁹⁶ Jeffares & Green (Pty) Ltd. Assessment of the Ship Generated Waste Reception Facilities National Ports Authority. (2006) p9.

²⁹⁷ Section 24 Bill of Rights of the Constitution of South Africa.

Of particular interest to ports, as recipients of much land-based and ship-generated waste are the following Acts which do not always mention pollution of the marine environment, but regulate many of the sources of pollution that flows into ports²⁹⁸:

- The Water Act 54 of 1956;
- The International Health Regulations Act 28 of 1974;
- The Health Act 63 of 1977;
- The South African Transport Services Act 65 of 1981, by legal succession to the South African Transport Services Act 9 of 1989;²⁹⁹
- The Environmental Conservation Act 73 of 1989; and
- Municipal by-laws dealing with pollution control.

The governance structures for the control of pollution of ports are based on these laws. The four organizations responsible for control of the quality of water entering or within South African ports are the Department of Water Affairs (DWA), the Department of Environmental Affairs (DEA), Local Authorities and Transnet National Ports Authority (TNPA). This study focuses on the TNPA, an operating division of Transnet Limited responsible for port management in South Africa. It is primarily responsible for the provision and maintenance of the basic infrastructure of the ports, including breakwaters, channels, turning basins, quay walls and road and rail infrastructure within the ports. It also provides marine navigational services such as pilotage and tug assistance³⁰⁰.

The TNPA website states that *“Transnet National Ports Authority is a division of Transnet Limited and is mandated to control and manage all seven commercial ports on the 2954km South African coastline. Situated at the tip of the African Continent, the South African ports are ideally situated to serve both the eastern and western seaboards. TNPA is the largest port authority in Southern Africa, controlling seven of the 16 noteworthy ports in the region. These ports are Richards Bay, Durban, East London, Port Elizabeth, Mossel Bay, Cape Town and Saldanha. Unlike most European ports, each South African port has a natural hinterland with a defined market and this determines to a large extent the nature and types of cargo handled at each port”*³⁰¹. The port of Ngqura based in some 20km northeast of the port of Port Elizabeth, is South Africa's 8th and latest

²⁹⁸ RD Walmesley, JJ Walmesley & R Breytenbech. An overview of water quality management of South Africa's major ports in catchments systems of SA harbour.

²⁹⁹ http://www.transnetnationalportsauthority.net/Ports_Act_Overview.html

³⁰⁰ Available on <http://www.transnetnationalportsauthority.net>. Accessed recently on 23 January 2011.

³⁰¹ Available on <http://www.transnetnationalportsauthority.net>. Accessed recently on 23 January 2011.

commercial port.³⁰² According to the South African Transport Services Act, 1981 (Act No. 65 of 1981), one of the most important roles of the TNPA is to ensure that pollution of the port from shipping and port activities is minimised. In order to achieve this, the organisation is obliged to:

- Develop port environment management strategies;
- Set port regulations with regard to pollution (based on South African and International law);
- Provide waste disposal facilities that comply with international requirements; and
- Monitor port activities for non-compliance with pollution controls.

In South Africa MARPOL 73/78 has been implemented under the Marine Pollution (Control and Civil Liability) Act and the Marine Pollution (Intervention) Acts and the regulations under these Acts. However, with the exception of oily waste, the regulations are largely silent about compliance with MARPOL 73/78 on port waste reception facilities for ship-generated waste and cargo residues. The best available guides to good practice to assess the adequacy of the existing port waste reception facilities, if any, for ship-generated waste facilities in local ports are the UK's Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations of 2003 (SI: 2003/1809) and the EU Directive 2000/59/EC of the European Parliament and Council. The regulations and the directive place a number of duties on port waste management planners and the vessels using ports and terminals³⁰³. The three major elements³⁰⁴ can be summarized as follows:

- The requirement for vessels to notify the port/terminal before entry, regarding the waste on board and the amounts to be offloaded/retained upon arrival;
- The requirement for vessels to offload all ship-generated waste to appropriate reception facilities (unless they have previously notified that they will be retaining waste on board); and
- The requirement for vessels to pay a mandatory fee with respect to the provision of port waste reception facilities³⁰⁵.

³⁰² <http://www.topcable.com/news/wire/4024.html>

³⁰³ Jeffares & Green (Pty) Ltd. Assessment of the Ship Generated Waste Reception Facilities National Ports Authority. (2006) p14.

³⁰⁴ [http://www.mcga.gov.uk/c4mca/guidetgp final version.pdf](http://www.mcga.gov.uk/c4mca/guidetgp%20final%20version.pdf)

³⁰⁵ Jeffares & Green (Pty) Ltd. Assessment of the Ship-Generated Waste Reception Facilities National Ports Authority. (2006) p14. [http://www.roadsni.gov.uk/strangford harbour waste management plan 2007.pdf](http://www.roadsni.gov.uk/strangford%20harbour%20waste%20management%20plan%202007.pdf)

Compliance with National, Provincial and Local Authority Requirements

The National Environmental Management: Waste Act 59 of 2008, section 2 (ii) and (ii) forms the basis for waste management at national, provincial and local government levels, and places strong focus on waste minimization and waste reduction in terms of generation and disposal. All galley waste received at the NPA ports, whether or not separated beforehand on board the ships, is brought together in a single container for collection and disposal by private contractors to a local waste landfill facility, as “infectious hazardous waste.” The above practice of combining waste streams is considered to be contrary to the aims of the National Environmental Management: Waste Act 59 of 2008 and every effort should be made to collect ships’ solid waste in two separate distinct waste streams i.e. dry recyclable materials (glass, metal, plastic and paper) and residual waste (wet contaminated waste). The dry recyclables should furthermore be de-classified from infectious waste to general waste and disposed of for recycling and processing. The current practice of waste management at the ports is therefore considered not to comply with the National Environmental Management: Waste Act 59 of 2008.

Based on Jeffares and Green’s assessment of the *status quo*, most of the ports, with the notable exception of the Port of East London and to some extent the Port of Durban, do not have the correct information to clearly understand their positions relative to the requirements of MARPOL 73/78. The information is often inaccessible and/or not in the form in which it could be used as a decision-making instrument to correctly determine their relative positions and to determine the specific types of port waste reception facilities that are required. They stated that the first step is to collect the relevant data to inform the decision-making process. Guided by the IMO Manual, they produced a comprehensive and detailed “Audit Protocol” which mostly remained incomplete at the conclusion of the audit because the key stakeholders that were consulted did not have the information at the very basic level that it was required. With this in mind, the next logical step for the ports to take is to consider the Audit Protocol as a template to collect that information that they do not already have at their disposal, without which progress to comply with MARPOL 73/78 would be very slow. It is a MARPOL 73/78 requirement that an “audit trail” of waste transported and disposed of be maintained, i.e. quantities generated on board and the quantities off-loaded at various ports of call. Jeffares and Green’s audits revealed that ships subscribing to MARPOL 73/78 have a register of waste (waste manifest) on board the ship at any given time. Data collection and assessment of the need for port waste reception facilities³⁰⁶ is paramount. Fully adequate facilities cannot be provided

³⁰⁶ http://www.mcga.gov.uk/c4mca/guidetgp_-final_version.pdf

without an accurate assessment of the need for them³⁰⁷. As a starting point they recommended that each port should consider using the expected traffic volumes to estimate waste quantities.

Additionally, the ports should, on an on-going basis, record the following information:

- the quantities and types of waste carried by each ship arriving at the port;
- the quantities of each type of waste that are off-loaded in the port or terminal from notifications; and
- the quantities of each type of waste stored by ships for reception in other ports.

When collating this information the ports should refer to the data collected³⁰⁸ from the notification/discharge information received from the ships. They recommended the Marine Waste (MARWAS) approach as a good tool to assess the need for facilities on the basis of the maximum amount of waste that the port could be receive³⁰⁹.

Obtaining the necessary information to carry out an informed waste analysis proved very difficult because none of the ports have reliable data, in the specific forms detailed in the audit protocol. Without the data it is difficult to make any conclusive remarks about the adequacy of the existing facilities in the ports that were assessed. Even more difficult is the prediction of the types and sizes of facilities that the ports would need to meet the future needs of the ships calling at the local ports. As things stand, the ports that do collect waste quantities aggregate the information. To ensure an effective system for ship-generated waste, the ports need to collect the statistics pertaining to ship-generated waste separately³¹⁰. Jeffares and Green's research of international best practices uncovered various useful approaches that have been used in Europe to circumvent the challenge of insufficient data. One such approach that provides the best possible step-by-step progression towards the delivery of adequate facilities for ship-generated waste is the use of a propriety computerized model known as Marine Waste (MARWAS) that was developed for calculating the volume of ship-generated waste³¹¹.

³⁰⁷ http://www.mcga.gov.uk/c4mca/guidetgp_-final_version.pdf

³⁰⁸ http://www.mcga.gov.uk/c4mca/guidetgp_-final_version.pdf

³⁰⁹ Jeffares & Green (Pty) Ltd. Assessment of the Ship-Generated Waste Reception Facilities National Ports Authority. (2006) p36

³¹⁰ Jeffares & Green (Pty) Ltd. Assessment of the Ship-Generated Waste Reception Facilities National Ports Authority. (2006) p37

³¹¹ Jeffares and Green (Pty) Ltd. Assessment of the Ship-Generated Waste Reception Facilities National Ports Authority (2006) p37

In the main the ports do not have sufficient waste reception facilities to accommodate certain types of waste that they are required to dispose of in terms of MARPOL 73/78 requirements. In terms of existing infrastructure and facilities, the main facilities are those that are owned by private contractors and NPA provides limited resources in terms of facilities. Hence provision should be made in the planning process for improvement of general facilities and infrastructure that meets the demands of the current users. General housekeeping in certain areas at the ports is acceptable and other areas need more attention.

Table 5.1: Summary of the Port Waste Reception Facilities Performance Rating against a set of key aspects derived from the study's ToR.

Summary of the Ports Reception Facilities Performance Rating	Durban	Richards Bay	East London	Port Elizabeth	Mossel Bay	Cape Town	Saldanha
MARPOL Compliance	×	×	×	×	×	×	×
Compliance with National, Provincial and Local Authority Requirements	×	×	v	×	×	×	×
Management Structure	F	F	G	F	F	F	F
Customer Needs	F	F	G	F	P	F	P
Infrastructure	F	F	F	F	P	F	P
Environmental Management System Compliance	G	G	G	G	G	G	G
Waste Management Plan	F	F	F	F	P	F	P
Quality of Service	F	F	F	F	F	F	F
Cost Recovery	G	P	P	P	P	P	P
v Fully Compliant G Good X Non-compliant F Fair E Excellent P Poor							

Source: Jeffares and Green (Pty) Ltd. Assessment of the Ship Generated Waste Reception Facilities National Ports Authority. (2006) p31

One of the key challenges encountered in this study was data collection and collation. Data collection at the different ports has shown that generally, detailed data is limited and difficult to obtain. Table 5.2 below provides an indication of the extent of this challenge.

Table 5.2 Indication of the extent of the challenge of data collection

Ports	No. of ships in 2005	Waste Types and Quantities (Tonnes)		
		Galley	Oily	Other
Saldanha	?	Not received	?	?
Cape Town	3453	?	?	?
Mossel Bay	?	Not received	?	-
Port Elizabeth	2667	1330	?	663
East London	720	Not Received	?	130
Durban	4520	1654	?	?
Richards Bay	1370	950	?	?

Source: Jeffares and Green (Pty) Ltd. Assessment of the Ship Generated Waste Reception Facilities National Ports Authority. (2006) p27.

According to the information obtained through the IMO Global Integrated Shipping Information System (GISIS), South African ports reported little information on the availability of port waste reception facilities³¹².

The UK ports' perspective

There are over 600 ports and harbours within the UK, handling a total of over half a billion tons of cargo every year, representing around 95% of UK trade by volume, 80% by value and employing some 30 000 people. About 20 ports handle over 5 000 000 tons a year³¹³. Each port has its own unique pattern of vessel traffic and usage. However, most ports have adopted a similar approach to meet their waste management obligations under MARPOL 73/78 by ensuring that licensed waste disposal contractors provide a service to the shipping community. These services are generally arranged through ships' agents on a regular or sporadic basis. Alternatively, a contract for the removal of common user waste may exist between the port or terminals and the contractor where the contractor is paid by the authority for some or all of the services provided. Regardless of the contractual arrangement, the responsibility for the ultimate disposal of waste in accordance with

³¹² Available on <http://gis.imo.org/public/PRF>. Accessed on 21 January 2011

³¹³ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

national legislation and local authority³¹⁴ specifications lies with the waste contractor. Once landed, waste controlled under Annexes I, II and V of MARPOL 73/78 is classified as *industrial waste* and as such are subject to the Duty of Care regulations for controlled waste under section 34 of the Environmental Protection Act 1990, and the waste management licensing provisions of Part II of the Act³¹⁵.

General UK strategy³¹⁶

The UK Government introduced legislation that requires operators of ports, harbours, marinas or other docking facilities to provide adequate waste reception facilities for ship-generated waste and to prepare a waste management plan with respect to the provision and use of port waste reception facilities. This obligation for port and harbour authorities forms part of a major initiative to cut pollution from all commercial and leisure craft of all sizes using UK ports. Central to the planning process is the requirement for port and harbour authorities to consult with their customers so that facilities can be tailored to the needs of port users, thus removing any incentives for waste to be discharged illegally at sea³¹⁷. Following a wide-ranging inquiry into all aspects relating to the prevention of marine pollution from merchant shipping conducted by Lord Donaldson in 1993 the UK Government initiated a comprehensive consultation exercise, which was conducted throughout 1995. The outcome of the consultation exercise was the announcement of 18 measures designed to combat the effects of pollution from ship-generated waste. It was acknowledged that there was no single solution, as waste is not only discharged by commercial shipping activities, but arises from all types of maritime activity, each with its own operational needs and economic circumstances³¹⁸. The UK Government, therefore, adopted an integrated approach consisting of the following three major elements:

- making controls more effective through improving regulations and their enforcement;
- improving the facilities for the legal disposal of waste in ports; and
- increasing the penalties for illegal discharge³¹⁹.

The requirement for ports and harbours to prepare port waste management plans is pursuant to the second initiative, and is arguably the most significant of the measures announced. The process is made mandatory by the Merchant Shipping (Port Waste Reception Facilities) Regulations of 1997.

³¹⁴ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³¹⁵ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³¹⁶ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³¹⁷ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³¹⁸ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³¹⁹ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

These Regulations also revoked and replaced earlier legislation on port waste reception facilities, re-installing the existing requirement for port and harbour authorities to ensure the provision of adequate reception facilities for ship-generated waste as directed in MARPOL 73/78³²⁰. However, port waste management planning goes beyond the requirements of the MARPOL Convention. Fundamental to the concept of port waste management planning is the premise that the facilities should meet the needs of their users and of the environment, thus removing as far as practicable any disincentives towards their use³²¹.

Since 1996, many port and harbour authorities in the UK have been introducing port waste management planning on a voluntary basis following preliminary guidance issued by the Department of Transport, Environment and the Regions (DETR) in the form of a Merchant Shipping Notice (No. M1659). However, measures steps have been put in place in the Merchant Shipping and Maritime Security Act 1997 to make this process mandatory through regulation³²². Further guidance to supplement the Merchant Shipping (Port Waste Reception Facilities) Regulations of 1997 is provided in an additional Merchant Shipping Notice (No. M1709) and in a booklet of guidelines entitled *Port Waste Management Planning how to do it*, published in January 1998. The guidelines have been drawn up by the DETR, with input from its Marine Pollution Advisory Group (MPAG), based on best practice developed during the voluntary period³²³. The consultation exercise brought together the views of the many different organizations that were involved, or had an interest in the operation of ships³²⁴ and their impact upon the marine environment³²⁵. Remarkably, some of these organizations had not consulted with one another prior to the exercise. In order to promulgate and ensure the continuation of useful dialogue between these bodies following the consultation period, the MPAG was formed to consider maritime pollution issues, chaired by officials of the DETR³²⁶. The group consists of representatives from government departments and agencies, maritime and ports associations, local authority associations, environmental organizations and representatives of seafarers and shermen, although membership of the forum extends to a larger pool of expertise, upon which the DETR may call as appropriate to the issues under discussion³²⁷. Meetings are convened at approximately nine-month intervals, and

³²⁰ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³²¹ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³²² Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³²³ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³²⁴ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³²⁵ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³²⁶ Ball, I.. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³²⁷ Ball, I.. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

where appropriate, in sufficient time to influence the submission of papers to the IMO's MEPC. Generally, the remit of the MPAG is to advise the government on matters relating to the following:

- the prevention of operational pollution from ships and all other seagoing vessels;
- the provision and use of port waste reception facilities; and
- any other aspects of maritime pollution which may be referred to the forum³²⁸.

Having adequate port waste reception facilities is clearly essential if reducing or eliminating pollution of the sea is to be achieved. The legal framework is in place in the form of the MARPOL 73/78, which has been widely adopted by maritime states³²⁹. MARPOL 73/78 requires ports to provide waste reception facilities which are '*adequate*' and which do not cause undue delay to the ships using them. All reception facilities, regardless of size should be able to receive MARPOL 73/78 Annex V waste (garbage) and Annex I waste (waste oils and oily mixtures), as well as be capable of handling any other waste in the quantities that would normally be handled or discharged within that port³³⁰. In the UK's view, adequacy should not be assumed simply because there is spare capacity in the reception facility already provided, or due to the lack of complaints from port users regarding individual facilities. Adequate facilities are those which have been carefully tailored to local needs and meet the operational requirements of the vessels using the port. Port and harbour authorities should therefore attempt to remove as far as practicable any disincentives towards their use by providing facilities that³³¹:

- cater for all types of waste which are landed at the port;
- are conveniently located and easy to find;
- are easy to use;
- do not present a cost disincentive; and
- are periodically reviewed to ensure that they remain adequate³³².

However, it is proposed that this is not a comprehensive definition, and other issues highlighted in this study may also contribute to the provision of adequate facilities. These include the provision of

³²⁸ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³²⁹ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³³⁰ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³³¹ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

³³² Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

appropriate information to port users on the location of facilities, their method of use and health and environmental factors. Furthermore, waste facilities should promote waste minimization initiatives by facilitating, where appropriate, waste re-use or recycling schemes. Agreeing on a standard definition for the term 'adequate' is important because no meaningful criteria for the identification of inadequacies can be developed without first deciding upon this issue. Following an extensive consultation exercise, the UK concluded that there was no simple solution which would ensure both better provision and use of port waste reception facilities. Pollution at sea arises from all types of maritime activity, not only commercial shipping. The UK has therefore developed an integrated approach to tackling this problem, based on a package of measures aimed at all types of port and harbour authorities and all types of vessels³³³.

³³³ Ball, I. "Port waste reception facilities in UK ports Iwan Ball", Marine Policy, 199907

CHAPTER 6: RECOMMENDATIONS FOR SOUTH AFRICA AND CONCLUSION

In order to ensure that vessels are able to comply with the requirement of MARPOL 73/78 to discharge waste in ports, a number of measures are required. Firstly, it is important that a comprehensive picture of the availability of facilities is collected and maintained by the Transnet National Ports Authority, which is made available to all vessels through a database. Of the eight commercial ports in South Africa, information on only five ports is provided on GISIS. It is surprising that there is no information on port reception facilities for the busiest port, the Port of Durban. The information system can be established as a source of information. Accurate and updated information would both ensure that vessel masters/owners cannot argue lack of knowledge of availability as an excuse to dump waste. It would also allow vessels that find that facilities are not available to report back to the IMO so that pressure can be put on ports to improve provision. It is disturbing to note that the GISIS information on South African port reception facilities was last updated in 2003.

Vessels should be required to maintain much more comprehensive and accurate records of waste generation and disposal, particularly in the case of smaller vessels. In order to produce these records, a system of record books is required, containing information on the levels of waste generated through normal operations. Additional records would also be required for cargo waste.

A system will be required to reimburse a proportion of the costs of facilities to vessels with green technology on board, to recognize their efforts to minimize waste generated.

In terms of the requirements for ports, South African ports should provide the IMO with accurate, up-to-date information on both the availability and cost of facilities, and would have to report to the IMO on measures taken to extend the availability or type of facilities provided. South African ports will need to maintain records on vessels that notify an intention to call in and on the amount of waste that they discharge. Records will also be needed for vessels not required to give advance notice. In both cases, records can be used to assist in determining whether the implementation of MARPOL73/78 has had a positive impact in South Africa, and also used in conjunction with the inspection system. For inspections, South African ports should provide administrative assistance to ensure that inspectors are notified of vessel movements. TNPA must implement the recommendation by Jeffares and Green (Pty) Ltd provided in their research on the assessment of ship-generated waste reception facilities by the National Ports Authority.

The lack of a comprehensive charging system that can be used by all ports allowing differential charging, might pose a challenge resulting in some vessels being charged more than other vessels. The GISIS indicates that Cape Town, East London, Port Elizabeth and Saldanha ports charge costs in addition to other services whereas the Port of Mossel Bay includes costs in port dues. This will discourage the usage of the available facilities. TNPA must introduce a comprehensive charging system that can be applied consistently by all ports.

In conclusion, with the continued use of aerial surveillance figures for waste oil, and the proper collection of records from vessels, South Africa would be able to more accurately assess the situation regarding illegal dumping at sea, and this information should provide evidence if any reduction takes place. Up-to-date, accurate information on the availability of facilities can also be used to identify how successful the MARPOL 73/78 has been in promoting usage of facilities, and to identify those vessels which fail to do so. Evidence of increased availability and a reduction in pollution levels would allow South Africa to claim that the ratification of MARPOL 73/78 and the implementation thereof has made a contribution towards protecting the marine environment from ship-generated waste. The writer believes that the MARPOL 73/78 has a major role to play in the prevention of dumping of waste at sea and that the EU Directive could serve as the reference point for legislation in South Africa.

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8 DECEMBER 2008

ADV. PM DIFETO (9035883)
MARITIME STUDIES

Dear Adv. Difeto

ETHICAL CLEARANCE APPROVAL NUMBER: HSS/0801/08M

I wish to confirm that ethical clearance has been approved for the following project:

“Waste and Port Reception Facilities “

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years

Yours faithfully


.....
MS. PHUMELELE XIMBA

cc. Supervisor (Adv. B Hutchinson)
cc. Mrs. C Haddon